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EDITORIAL

A HAPPY NEW YEAR.

That we are well advanced in the fourth year of carnage and devastation brought by the world war and that the situation for our allies and selves is not particularly bright at the moment the new year opens, are no good reasons why we should not once again wish our readers and patrons—our friends—a happy new year.

Better can we do so this year than last for in the meantime we have seen our duty as a nation and we are doing it as we understand it. The medical profession, the greatness of whose mission is realized even better in war than in peace, is offering itself to the country and to the cause, is laboring to perform its share of the stupendous task which is before those who believe that right is above might.

What are toil, want, pain when weighed in the balance against

the sense of duty well done, the relief of agony, the righting of wrong?

We *can* be happy doing our bit, each according to his light and his opportunity, though it mean fatigue, privation and suffering, if we feel we are bringing nearer and nearer the time when we may

"Ring out old shapes of foul disease,
Ring out the narrowing lust of gold.
Ring out the thousand wars of old,
Ring in the thousand years of peace!"

ORIGINAL ARTICLES

(No paper published or to be published in any other medical journal will be accepted for this department. All papers must be in the hands of the Editors on the tenth day of the month preceding that in which they are expected to appear. Reprints may be had at reasonable rates if a WRITTEN order for the same accompany the paper.)

FRACTURE OF THE INFERIOR MAXILLA.*

By DR. A. G. FRIEDRICHS, New Orleans.

The case which I present carries no special feature, either in the way of novelty or originality. My purpose in presenting it to you is to bring your attention to a splint which allows perfect mobility and use of the masticatory machine, without any interference whatever or even discomfort. It is singular that the medical profession seems to display so much ignorance in regard to this matter, apparently satisfied with any kind of result just so there is a union of the fragments without regard to the future use of the jaws. Some of the results which I have seen are simply appalling. The use of bandages in an attempt at accomplishing immobility of the jaw, results in failure, as in my experience, an apparatus of any kind, whether it be bandage or splint, which has not been especially prepared for the individual case, is a flat failure. In fact, the fixing of the jaw in any position but in normal occlusion, would in my judgment, in the present day of enlightenment, be considered malpractice.

This particular splint is only applicable where you have teeth

*Case presented before the Orleans Parish Medical Society, October 22, 1917. [Received for publication November 15, 1917.—Eds.]

on either side of the fracture. It matters not how many fractures of the jaw you have, whether compound or comminuted.

Where the fracture is beyond the teeth, whether in the body of the jaw or at the angle, a splint of this character would not avail and the case has to be treated by a different plan. In the case of a fracture of the kind above mentioned, if you have teeth in occlusion, by wiring these teeth in their proper relation, you establish the normal occlusion and fix the fracture in a state of immobility. Now in regard to the end of the fracture, if it be at the angle, whether it be in proper approximation or not, its union in that position will not affect the proper use of the masticating machine.

THE MANUFACTURE OF SERUMS.*

By DR. M. F. WILSON, New Orleans.

Time will only permit of a rapid and somewhat superficial survey of the process of manufacturing antitoxins for the cure of certain infectious diseases. We will use Antidiphtheric Serum as a type, as this is the best known and most widely used, and the process of manufacture of other antitoxic serums, which have a place in medicine, differ but very little from it.

While the general plan of the work is practically the same in all laboratories, individual methods may differ somewhat. There are no secret processes; in fact, the necessarily high scientific character of the work itself and those in charge of such laboratories preclude the idea of secrecy.

The Diphtheria bacillus was discovered in 1883 by Klebs, and in 1884 by Loeffler, and is therefore commonly known as the Klebs-Loeffler bacillus. Behring, Kitasato, Roux and others contributed to the method of immunizing against the organism, and Ehrlich designed a method of estimating the power of toxin and the antitoxin.

The first thing necessary for the manufacture of Antidiphtheric Serum is a pure culture of the causative factor, Bacillus Diphtheriæ. A "Starter" flask containing the appropriate culture media is inoculated with the pure culture of the diphtheria organism and transferred to the incubator, where after the bouillon be-

* Read by invitation before the Orleans Parish Medical Society, October 22, 1917. [Received for publication November 15, 1917.—*Eds.*]

comes saturated with the germ and its toxic product. This "starter" flask is used to inoculate other flasks, which after being allowed to grow for a number of weeks, or until the liquid is saturated with the organisms and their toxic properties, the flask is taken into the filtering room where the contents are siphoned through a Berkfeld filter, a pressure of compressed air, about 300 pounds to the square inch being used.

The clear filtrate after being submitted to cultural tests to insure its sterility is used for immunizing the horse. It is called, for convenience sake, "toxin."

In order to arrive at the potency of the toxin we make use of Ehrlich's method, which consists of injecting into normal 250 gramme guinea pigs, a mixture of the toxin under test, in decreasing doses, along with one immunity unit standard Government antitoxin. The object is to determine the smallest amount of toxin required to kill a guinea pig in four days. This is called the "lethal plus" dose (L + dose). Having determined the relative strength of the toxin, it is now ready for use.

The horse is injected subcutaneously, with all possible precautions to preclude bacterial infection. The beginning dose of the toxin is 0.1 mil, combined with an appropriate amount of antitoxin. The result of this injection is usually rise in temperature, with symptoms of rigor, depression and rough coat. These symptoms soon pass off and the first dose is followed in 24 hours by a larger one. These doses are continued for 24 to 48 hours, gradually decreasing the antitoxin amount and increasing the toxin, until the horse receives, for the last dose, about 250 millilitres.

During this process there develops in the blood of the horse a substance known as antitoxin. In most cases the horse is immunized in from three to six months, at which time he is bled from the jugular vein, under sterile precautions, and the blood is collected in large sterile tubes or glass cylinders which are placed in cold storage until clotting occurs. The serum is then decanted off and a preservative added. It is then filtered through a porcelain filter to remove the fibrin and any air-borne organisms, after which it is tested for its antitoxic value again making use of Ehrlich's method as follows:

A number of guinea pigs, each of 250 grammes weight, are injected with the L + dose of toxin and decreasing quantities of the antitoxin under test. This test is just the reverse of the

method of determining the L+ dose. What we are now trying to determine is the amount of antitoxin which would neutralize the L+ dose and save the life of a 250 gramme guinea pig, or the antitoxic unit. The serum is now tested by a number of safety tests, both microscopical and cultural, and by injecting into guinea pigs. Having passed these tests it is placed in packages for market.

Early in the history of Diphtheria Antitoxin it was discovered that the antitoxin element in the serum was either a globulin, or so intimately associated with the globulin content as to precipitate with it. Various attempts have been made to separate this essential element from the non-essential portions of the serum by various methods, all of which are based upon the principles of repeated precipitation, the final precipitate being dialyzed to a fluid consistency.

There are two reasons for the present use of the globulin serum. First: It is believed that the globulin being free from many of the albuminous substances in the native serum, are less liable to produce undesirable after-effects when administered to humans. Second: The very much smaller bulk of a number of given antitoxic units compared with the native serum is a distinct advantage.

THE DISCUSSION OF DR. WILSON'S PAPER.

Dr. C. W. Duval: I have enjoyed the remarks of Dr. Wilson on Biological Products and feel sure that we all have benefitted from his very clear and lucid presentations of the subject. I note that he stresses the globulin preparation of antitoxin for its value over the whole serum product. Years ago it was thought that the separation of the globulin moiety of the serum which contains the antitoxin would prevent many of the bad effects occasioned by the administration of the whole serum. In other words, there would be less chance of anaphylaxis or serum sickness from the injection of the globulin portion. Experience does not show that such is the case, for there are as many skin eruptions resulting from the globulin as from the whole serum. As the method of separating the globulin is tedious and expensive, and as the purified serum has no advantage over the whole product, there is no need of it; as a matter fact its use should be discontinued because it necessitates charging a higher price for antitoxin.

I further note that Dr. Wilson in describing the production of diphtheria toxin alludes to large volumes of bouillon. I would like to ask the Doctor if they do not obtain a greater strength of toxin by the employment of small quantities of bouillon. In my experience it is essential that shallow layers of broth be used in the production of

toxin because of the aerobic nature of the diphtheria micro-organism.

Dr. Wilson (In closing): I was surprised to hear Dr. Duval make the statement that authorities agreed that there was no special virtue in the globulins over the native serum. Manufacturers certainly would not go to the added expense of preparing globulins unless there was a demand. Moreover, the smaller bulk of the globulin compared with the native serum is an added advantage.

FURTHER NOTES ON ALIMENTARY GLYCOSURIA.*

By DR. ALLAN EUSTIS, New Orleans.

That there still exists considerable confusion as to when a patient is diabetic, and when he is simply a victim of alimentary glycosuria, is evidenced by even a cursory review of the more recent texts upon this obscure condition. Any additional facts, therefore, which may tend to elucidate the question should be sufficient excuse for the following brief report of cases presenting unusual features.

Folin[1] by means of his technic showed that urine normally contains a small amount of sugar and Meyers[2] has determined this normal amount to vary from 0.08 to 0.2 per cent. Joslin[3] in discussing physiological glycosuria states, "It would seem quite impossible to demarcate sharply between normal and pathological urines with reference to the sugar output." He states further in discussing Alimentary Glycosuria, "If the carbohydrates (ingested) are in the form of starch (alimentary glycosuria e amylo) it would signify diabetes mellitus, but if the carbohydrates (ingested) are in the form of sugar (alimentary glycosuria e saccharo) it might or might not signify diabetes." Naunyn[4] earlier in attempting to clear up this point had suggested the administration of 100 gms. of dextrose two hours after a breakfast of a large cup of coffee and milk, and 80 to 100 grams of bread. He considered that diabetes mellitus existed if dextrose could be demonstrated in the urine under such conditions, in quantitative amounts. Von Noorden[5] has always maintained that any one showing sugar in the urine is a potential diabetic and should be treated as such. However, he has admitted to me that many of these cases may live a lifetime and never present a single cardinal symptom of diabetes mellitus, and may never again have a glycosuria after the initial instance.

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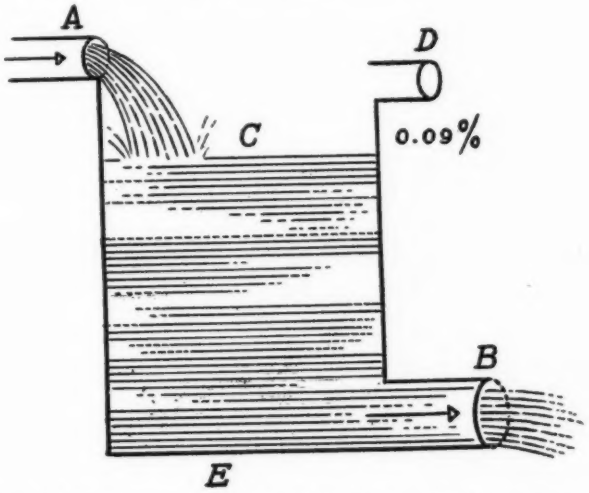
Allen[6] who has probably contributed more to our knowledge of diabetes than any other single observer of recent years proposes a differentiation between alimentary glycosuria and diabetes based upon experimental data which suggested that the dextrose tolerance of a normal individual is practically unlimited, while in the diabetic the tolerance to dextrose is limited and if administered beyond this tolerance, a greater amount of dextrose is excreted even than is injected. He considers that in the normal individual the dextrose is circulated in the form of a colloid and held by means of an amboceptor which he speaks of as a "pancreatic amboceptor," but that in diabetes due to disease of the pancreas and lack of "pancreatic amboceptor" (internal secretion of other writers) the dextrose circulates as a crystalloid passing through the kidneys readily and producing diuresis. However, later experiments by Woodyatt, Sansum and Wilder[7] tend to demonstrate that as much depends upon the rate of injection or absorption of the dextrose as upon any condition of colloid or crystalloid. All recent writers have centered their attention upon the carbohydrate factor and have overlooked those cases, by no means rare, whose urines reduce alkalin copper solutions to the extent often of 5 to 7 per cent. of calculated dextrose, but with no action on polarized light and which do not ferment. These cases have no polyuria, polydipsia, or other cardinal symptoms of diabetes mellitus and always present evidences of diseased liver or a passively congested pancreas and a severe intestinal toxemia. In a former paper[8] before this Society, I called attention to such cases and since then I have observed many more. The fact that only recently having such a case come under my care which had been formerly treated by one of my colleagues as a case of diabetes according to the method of Allen, has led me to again bring the matter to your attention. Such cases are harmed, rather than improved, by the Allen treatment as successful management will depend upon careful attention to the influence of intestinal toxemia rather than to the carbohydrate intake. Crofton[9] has since called attention to the influence of intestinal toxemia in diabetics and mentions that the aromatic poisons from the intestinal canal are normally detoxicated by the liver by combining them with sulphuric acid or acetic acid, but that when excessive amounts are absorbed they may be combined with glycuronic acid, and excreted as combined glycuronates by the kidneys. These glycuronates will reduce Fehling's or Benedict's

Solutions, and upon this fact, a wrong diagnosis of diabetes may be made. Another factor in incorrect diagnosis of diabetes is to be found in dextrose radicle obtainable from all protein absorbed, 50 per cent., approximately, of the protein molecule forming dextrose which must be burned, stored up as fat or glycogen, or excreted by the kidneys. The accompanying table illustrates the fate in the body of the several food-stuffs, and will bear repetition from a former paper.

Food Substance.	In alimentary canal split up into:	Absorbed by portal system and transformed by liver into:	Stored up in muscles as:	Burned up by tissues into:	Remarks.
$C_{12}H_{22}O_{11}$ Saccharose,	Dextrose, $C_6H_{12}O_6$, and Levulose $C_6H_{12}O_6$	Glycocogen, $C_6H_{10}O_5$ Glycogen.	Glycocogen. Glycocogen.	CO_2 and H_2O glycuronic acid. CO_2 and H_2O glycuronic acid.	Dextrose and levulose are excreted by the kidneys if not utilized by the tissues.
Starch, $C_6H_{10}O_5$	Dextrose.	Glycocogen.	Glycocogen.	CO_2 and H_2O glycuronic acid.	
Maltose, $C_{12}H_{22}O_{11}$	Dextrose, $C_6H_{12}O_6$	Glycocogen.	Glycocogen.	CO_2 and H_2O glycuronic acid.	Excess maltose excreted by kidneys.
Lactose, $C_{12}H_{22}O_{11}$	Dextrose and galactose	Glycocogen.	Glycocogen.	CO_2 and H_2O	When liver is deranged, galactose appears in urine.
Cellulose, $C_6H_{10}O_5$	Very little if any effect in human.				
Proteids,	Peptones, amino-acids, xanthine bases.	Serum, albumin and globulin	Syntonin, creatin, etc.	Urea, uric acid, glycocol, and dextrose.	If liver function is deranged, have lowered alkalinity of blood.
	Ammonia. Toxic amines from intestinal putrefaction.	Urea. Non-toxic compounds.	Creatin. Creatin.		
Fats.	Absorbed through lacteals and into general circulation through the liver. Do not pass through the liver. Incomplete combustion results in diacetic liver.				

As is well known the blood content of sugar is kept within normal limits, from 0.09 to 0.15 per cent. Any condition which raises this content, even momentarily, will cause a hyperglycemia, which will be manifested in a glycosuria. I am well aware of those few cases in which the renal threshold is high and in which a hyperglycemia may exist without a glycosuria, but for all practical purposes it can be accepted that a glycosuria represents a con-

dition of hyperglycemia either temporary or permanent. That a transient hyperglycemia may be dependent entirely upon faulty liver function, can be better understood after studying the accompanying illustration taken from von Noorden[10].



The tank E represents the blood stream in which the sugar level is kept constantly at 0.09%, C, by the fact that the tissues utilize the sugar through the outlet, *B*, as fast as it flows in from the liver through the inlet, *A*. Any condition which will cause the inflow from the liver to run faster than the tissues can utilize the sugar, will cause a rise in the level of blood sugar; until there is a hyperglycemia or overcharge of sugar which flows through the kidneys represented by the overflow, *D*. Such a condition exists in alimentary glycosuria, the glucose, levulose or galactose, passing rapidly through the liver on account of passive congestion of this organ.

In diabetes the liver has lost its power to fix dextrose in the form of glycogen due to the absence of the pancreatic harmone, but in addition, the tissues have also lost their power to utilize dextrose. In other words the tank overflows rapidly and continues to overflow not only on account of increased inflow, but also on account of stoppage of its lower outlet. That even transient disease of the liver is capable of producing a glycosuria has led to

the administration of 100 gms. of levulose by Strauss[11] and of 50 gms. of lactose by Bauer[12] as tests for hepatic function, the urine being examined for reducing sugars in each instance. I have seen many cases, two of which are reported in detail below, showing as high as 7.0% of calculated dextrose due entirely to congestion of the liver from irritating effects of intestinal poisons, which cleared up in twenty four hours from a brisk purgative and a low proteid diet. It has been interestng to note that after being sugar free and giving a negative test with Ehrlich's Aldehyde reagent and being free from indican, on returning with a strong indican reaction, they again void a urine which will reduce Fehling's Solution.

Cast I. Mr. P. R., a wholesale grocer, 39 years old, was reported in my former paper, having been first seen by me in 1912 with 7.0 per cent. of calculated dextrose, a positive test with Ehrlich's aldehyde reagent and a very strong indican test. At the first examination his liver was enlarged, dulness 14 cm. in mammary line, but with no subjective symptoms of diabetes, except, languor and loss of weight. After free purgation, a two week's vacation at a resort whose waters are laxative, and living on a low proteid diet, but with an abundance of carbohydrates, his liver dulness decreased to 8 cm. and his urine failed to reduce Fehling's Solution after administering 100 gms. of lactose on an empty stomach. He was cautioned to lead a less sedentary life, to eat sparingly of animal protein and to avoid constipation. I have seen him since at intervals of one to three months up to the present time, and he has never again shown any sugar, while he has since been granted a ten thousand dollar policy in one of our most conservative life insurance companies.

Case II. Dr. W. T. J., 49 years of age, consulted me for languor, inability to properly attend to his professional duties, and on account of the fact that he had repeatedly found sugar in his urine and had lost weight. His bowels were constipated but there was no polydipsia or polyuria. In February, 1916, while weighing 211 pounds, but with a constant feeling of languor, he had found sugar in his urine. He ceased eating sweets and starches and in four months had lost 57 pounds. During this time he had occasional putty stools and while sugar was not a constant constituent of his urine, it was frequently found. A quantitative estimation of sugar in his urine was never made, but he stated that when present it gave a heavy reduction with Fehling's Solution. When first seen by me in January, 1917, he had a dilated heart from myocarditis, but with no valvular lesions; his liver was enlarged (dulness 12 cm. in mammary line), boggy and sensitive on palpation. There was no jaundice, but the skin was sallow. His teeth were in a necrotic condition from pyorrhoea alveolaris. Otherwise his physical examination was negative and both eye fundi were normal with no retinitis. He voided a total of 875 cc. of urine in the first twenty-four hours, with specific gravity 1032, acid, nega-

tive albumin, urobilinogen, sugar, bile pigments, diabetic acid and acetone, although there was a very slight reduction with Fehling's Solution and a plus six indican by Salkowski's test.

After free purgation, a low proteid diet even with an abundance of sugar, he failed to show any sugar in his urine by polariscopic examination during his entire stay of six weels in New Orleans, while his liver dulness diminished to 8 cm. in the mammary line and all sensitiveness in this region had disappeared. Treatment was directed toward overcoming his intestinal toxemia and thus resting the liver. I have received a letter from him only during the past ten days, in which he states, "I am feeling fine, weighing about 180 pounds and seldom find a trace of sugar. Am eating everything." The putty stools in this case suggested involvement of the gall bladder with probably slight pancreatic involvement also, but after coming under my care there is no doubt but that his liver and intestinal toxemia were the dominant factors in his case.

These two cases are representative of eighteen similar cases seen by me in the past six years, and the results obtained warrant my advocating a definite plan of treatment for such cases; but it is well to bear in mind that no two cases can be treated exactly alike.

TREATMENT.

Where a poorly functioning liver has been ascertained to be present and there is evidence of intestinal toxemia, before instituting Allen's starvation treatment in cases of glycosuria, it is justifiable to give an initial purgative, prohibit all animal protein, and allow an abundance of cereals, fruits and vegetables. I would again remind you that milk should be withheld in all cases of intestinal toxemia for at least two weeks. In such cases as I have tried to represent the sugar should disappear from the urine in from 24 to 48 hours and treatment should be continued for at least two months towards overcoming any tendency to intestinal toxemia. It is not in the scope of this paper to undertake a consideration of this broad subject, but I will state that I have obtained good results from a capsule three times daily of Acid Sodium Oleat 2 grs., Phenol Phthallein 1 gr., and Sodium Salicylate 2 grs. An active culture of the Bacillus Bulgaricus when properly administered is of undoubted benefit, and should be given one hour before meals, when there is least acid in the stomach, as I have found that a free acidity of 18 will kill the organism in five minutes. Two good tablets should be crushed in a quarter of a glass of water and a teaspoonful of lactose added so as to furnish food for them to grow upon. The choice of laxatives will vary with the individual, but my favorite is a confection of raisins, dried figs

and senna leaves, with mineral oil next in favor. Enteroptosis should be corrected with a suitable abdominal supporter, and cecal statis due to a chronic appendix should be relieved by surgical measures. Exercise should be insisted upon in all cases unless it is contraindicated on account of a weakened heart muscle.

I do not wish to be understood as opposing the starvation treatment of diabetes, but I have always considered that it should be attempted only in certain selected cases, and now feel more certain than ever that not only is it unnecessary, but that it may actually do harm in inexperienced hands in certain cases of glycosuria which are non-diabetic.

Summary.

1. The patient should not be placed upon the starvation treatment until it is ascertained that diabetes positively exists.

2. There are certain cases of alimentary glycosuria, due to faulty liver function and intestinal toxemia which may be relieved by treating the latter condition.

3. In such cases the carbohydrate metabolism is a relatively unimportant factor.

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Discussion of Paper by Dr. Eustis.

Dr. Randolph Lyons: In my experience, glycosuria of non-diabetic origin is rare, except transient types. There are many causes of glycosuria, besides those of hepatic origin. It is important to eliminate all such before branding an individual as a diabetic and putting him on the Allen treatment. I have come across only one case as Dr. Eustis describes, and I have been most interested in his paper. It must be remembered that a diabetic will tolerate considerable starchy food, providing his proteins are greatly reduced, without having glycosuria. His blood sugar, however, may be above normal and he will be potentially a diabetic.

Dr. Eustis (in closing): I think it is possible, Dr. Lyons in his experience has overlooked some of these cases of diabetes, resulting from

hepatic causes. I think those cases where there is a marked enlargement of the liver, and evidence of intestinal toxemia can be properly relieved of the glycosuria by instituting proper treatment for that source. Recites case, showing that by giving free sugar and a liberal carbohydrate diet without any evidence of increase amount of glycogen in urine. I think that the proteid element, as a causative agent, this class of cases should be studied and properly interpreted.

THE SELECTION OF DONORS BY GROUPING FOR BLOOD TRANSFUSION.*

By ELIZABETH BASS, M. D., New Orleans.

It is now generally recognized that iso-hemolysis and iso-agglutination constitute a source of danger unless a donor is selected who belongs to the same iso-agglutinin group as that of the patient.

Moss[1] states that many transfusions have been performed between members of different groups without untoward results, but that a sufficient number of "accidents" are on record to remind one that an element of danger exists, and the majority of transfusionists, to-day, recognizing this danger, take the trouble to select donors belonging to the same group as the patient. Moss, also found that all normal and pathological bloods alike could be classified into four groups by agglutination tests of the serum against the corpuscles.

The serum of an individual may or may not contain an isohemolysin; but if an isohemolysin is present, it acts in accordance with the laws governing the action of the iso-agglutinins. The serum of Group I which contains no iso-agglutinin, never contains an iso-hemolysin. The serum of Group II may or may not contain an isohemolysin, but if present it acts only on the corpuscles of Groups I and III. If the serum of Group III contains an isohemolysin, can act only on the corpuscles of Groups I and II, while isohemolysin occurring in the serum of Group IV may act on the corpuscles of Groups I, II, and III.

Consideration of this classification shows that if transfusion is performed between members of the same group, the danger of iso-agglutination and isohemolysin is obviated; but if the patient

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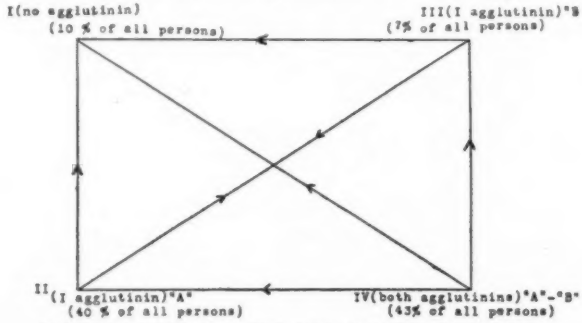
and donor belong to different groups, the possibility of danger is present.

It is preferable but not always necessary in transfusion that donor and recipient belong to the same group. The essential, however, for safety is that the serum of the recipient should not agglutinate the corpuscles of the donor.

The method employed for determining the compatibility of patient and donor with reference to iso-agglutinin and isohemolysin consists in testing serum of the patient against the corpuscles of each of the prospective donors, and the serum of each prospective donor against the corpuscles of the patient. Any person whose serum does not agglutinate the patient's corpuscles and whose corpuscles are not agglutinated by the patient's serum belongs to the same group as the patient and is a suitable donor as far as isohemolysin and iso-agglutinin are concerned.



SANFORD'S DIAGRAM OF THE MOSS AGGLUTINATION GROUPS.

Sanford[2] suggests a diagram, which is here reproduced, that is easily understood if, as he says, we accept Lansteiner's idea regarding the number of agglutinins, *i. e.* the serum of Group II contains Agglutinin A, and that group III contains Agglutinin B, while group IV contains both Agglutinin A and Agglutinin B. Group IV then agglutinates the corpuscles of Group II by virtue of its Agglutinin B and its Agglutinin A acts on the corpuscles of Group III.

The diagram tells at a glance to what group a person must belong in order to be a suitable donor for an individual of another group. If the arrow points toward the patient's group, and away from the group of the donor, the transfusion may be done without

what Brem has called "anaphylactoid" reaction. The arrows point in both directions on the diagonal connecting Groups II and III and blood in these reciprocal groups should not be interchanged.

It has been found that 10 per cent. of all persons are in Group I, 40 per cent in Group II, 43 per cent. in Group IV, and only 7 per cent. in Group III.

100 per cent of individuals are suitable as donors for Group I patients, 83 per cent. for those in Group II, 50 per cent. for those in Group III, and only 43 per cent are available for Group IV patients, as Group IV patients must have donors of the same group.

No serum agglutinates corpuscles belonging to its own group and if one has a known Group II or Group III blood, it is not difficult to determine the group of any other blood by testing the known serum against the unknown corpuscles and the unknown serum against the known corpuscles. It is believed by the various investigators that the group reactions are permanent characteristics. In fact, Brem and Zeiler[3] observed the reactions of several different individuals over a period of six years and saw no change.

Moss[4] grouped the bloods of 213 individuals, 97 of whom were healthy and 116 were diseased. 22 healthy individual's bloods were tested from two to five times, at intervals of a few days. weeks or, months. The agglutinating action of these serums were found to be constant. Moss found, also, that the individual's group reaction is not established at birth, but that it is established in 85 per cent. of children between the ages of 1 and 2 years, though it may not be established completely until 10 years or more.

Only a small quantity of blood, such as can be obtained from a puncture of the finger tip, is required for the test. Five or six drops of blood from Group II or Group III blood is collected in a small, dry, clean test tube or capillary pipette and allowed to clot. One or two drops of blood are collected in another tube containing 1 c. c of 1.5 per cent. sodium citrate in 0.9 per cent. salt solution for the corpuscle suspension. The unknown blood is collected in the same way in two similar tubes. Equal parts of the serum and corpuscles suspension are placed on a cover glass and carefully stirred with a small glass rod. This is inverted over a hollow glass slide and rimmed with oil and examined under

the microscope. Agglutination, if it occurs, takes place at room temperature and, usually, within five minutes.

I have grouped the bloods of 55 persons and in but three instances had occasion to change the first grouping. More than half the number were diseased bloods, representing such conditions as malaria, typhoid, influenza, pneumonia, secondary anemias from various causes, carcinoma, syphilis, et cetera.

My blood happens to be in Group III and I have been able to group all of the serums and corpuscles against my group.

Over three hundred tests have been made on the 55 blood and in fully 90 per cent. of instances the bloods were grouped against other Group II and Group III bloods as they were found.

Two brothers showed different group reactions and on testing the parents bloods found that one son's group corresponded to that of the mother while the other son's group followed that of the father.

The group reactions proved the same in four members of my own family.

The technic is simple and it does not require a great deal of time to group the donors. According to many transfusionists a certain amount of danger to the patient can be avoided by careful selection of the donors.

Ottenberg and Kalinski[5] state that accidents due to the occurrence of hemolysis and agglutination of donor's blood-cells by the patient's serum, or vice versa, can be absolutely excluded by careful preliminary blood-tests. No accidents occurred in their 125 cases.

Sydenstricker, Mason, and Rivers[6] have reported one hundred transfusions on 34 different persons and of this number they had trivial symptoms in 17 per cent. of the cases. In every case the bloods were compatible by the routine tests. One patient was given 9,000 c. c. of blood within two months' time without any severe reactions.

Lewisohn[7] reports having used the citrate method of blood transfusion in 30 cases, 7 of whom were children ranging in ages from 20 days to 7 years. In one case there was marked anaphylactic reaction after the first transfusion, though the blood used was from the child's mother; but after the second transfusion, for which a professional donor had been selected and properly grouped, there was no reaction.

Barnes and Slocum[8] state in their report of blood transfusion in nine successful cases that no patient suffering from grave anemia particularly if due to hemorrhage should be denied the chance of recovery offered by blood transfusion, but that suitable donors should be selected.

I am indebted to Dr. A. H. Sanford of Rochester for blood of Group II and Group III patients, also for confirming my group number.

I want to say that it was at the suggestion of Dr. F. W. Parham that I made these tests and I wish to take this opportunity to thank him for his interest and help.

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DISCUSSION OF ELIZABETH BASS'S PAPER.

Dr. Parham: My interest in this subject was renewed at the Mayo Clinic. I was so much impressed with the method of transfusion carried out there, and with the way of selecting proper donors in cases to be transfused, that I suggested to Dr. Bass to take up this work. Undoubtedly their method of grouping donors is a very convenient way in institutions to facilitate the prompt carrying out of transfusion in urgent cases. Having a number of people properly grouped as to their agglutination, it is only necessary then to find out the group of the person to be transfused. While the haphazard selection of donors, without regard to the influence of the blood upon that of the recipient, may not often be followed by bad results, the occasional disaster admonishes us to take every precaution in such an important procedure, and this method of grouping will facillitate taking such precautions. Now that the citrate of soda method has been shown to be free of danger, transfusion will undoubtedly be resorted to more frequently than heretofore, owing to the ease with which this method can be carried out. By this method the blood to be transfused is mixed with citrate of soda in the proportion of .2 of 1 per cent. I think we all ought to feel indebted to Dr. Bass for showing the practicability of this method and its advantages.

Dr. C. C. Bass: It is important to be very careful that the serum of the donor does not produce deleterious action upon the blood of the

recipient; small quantities of blood may not produce any harmful results, though a very large amount would. It is likely that harmful results from transfusions may be overlooked and attributed to other causes incident to the illness of the patient, especially when the deleterious action is slow in manifesting itself. It often occurs that transfusion is performed for conditions threatening life. In such cases death following transfusion and actually caused by it would likely be attributed to the former disease or condition and not to the transfusion.

In view of these facts it is quite possible that harmful results from transfusion are much more numerous than is generally supposed. Therefore simple methods promising safety against them are of much importance. The paper calls attention very timely to the apparent incompatibility of a small per cent. of bloods. This is, however, large enough to justify the test.

Dr. Parham: The case reported by Dr. C. C. Bass shows emphatically the necessity of using a complete blood for transfusion. The proper selection of the donor would prevent such unfortunate results. Even Bernheim, who was somewhat careless in this respect at first, now takes the greatest precautions in the selection of his donors for transfusion. The occasional disaster should make us cautious.

Dr. C. W. Duval: I have enjoyed immensely listening to Dr. Bass' presentation of the subject of transfusion. I think the Doctor might have told us a lot more and not confined herself so strictly to the classification of the four bloods. A great deal has been said from time to time about the importance of transfusing the proper strain of donor's blood; otherwise untoward results are likely to happen from hemolysis or hemagglutination within the recipient. I doubt very much whether this is the true explanation of what actually occurs in the cases that show symptoms of distress from transfused blood. That we have differences for different animal species, is not to be denied, but I do believe that this is the case for individuals of the same species. Perhaps in the cases that show bad effects from transfusion, the trouble might be attributed to differences in the osmotic pressure of the two bloods. I would like to ask Dr. Bass if she has run across anything in the literature that stresses osmotic pressure as an explanation for the bad effects sometimes encountered in transfusion work. I would also like to know if in her studies she has seen mention of any careful histopathological studies from autopsy material in fatal cases.

Dr. Elizabeth Bass (in closing): I wish to thank the men who have so liberally discussed my paper. This paper was dealing entirely with the grouping or donors. I am therefore not prepared to go into the clinical results, or to be able to furnish any conclusions concerning same. Hematuria is rarely found as an indication of bad effects resulting from transfusion. Such cases as secondary anemia, pernicious anemia, marasmus, inanition, hemophilia, etc., are conditions in which transfusion has proven successful. I saw no records of autopsies in the various articles read. Much has been done and much is yet to be done in this line.

OPERATIVE INTERFERENCE IN POTT'S DISEASE.*

By PAUL A. McILHENNY, M. D., F. A. C. S., New Orleans.

When Albee and Hibbs independently, through their respective operations, drew attention to the possibility of markedly shortening the duration of treatment of patients afflicted with tubercular spondylitis, they laid the foundations of a surgical procedure that has proved most beneficial to many cases previously thought doomed to at least a permanent and unsightly deformity. Both operations were accepted enthusiastically by the majority of those interested in the treatment of such cases, and it was not long before reports of one or both operations were coming from all parts of the country, some with gratifying results, others scathing criticism. The favorable results were probably due to a careful procedure carried out by those who followed the teachings of the originators, while those who criticised probably thought the operations a *certain cure* for all cases of spinal caries in spite of what stage they might be in at the time the operation was performed, while at the same time disregarding the rules. Now that sufficient time has elapsed to prove the merits of the procedure, it has been quite generally conceded that operation is indicated in certain cases, and is as strongly counterindicated in others. Tubercular lesions in the vertebræ do not differ from similar foci in other articulations, and conservative treatment in hip and knee joint tuberculosis has proved absolutely that it is often possible to cure the disease so that a fair range of motion in many, and an almost perfect return of function in some may be counted upon. Such results, of course, depend primarily upon the stage of the disease in which one may begin treatment, and secondarily upon how carefully treatment is applied both by the surgeon and the family. If one undertakes to treat a case of hip or knee joint tuberculosis, which he is so fortunate as to obtain during the first stage of the disease, in which the articular surfaces are simply inflamed, and there is practically no bone destruction or abscess formation, he would hardly consider it justifiable to perform an ankylosing operation upon the joint and thereby forever eliminate the possibility of a return of motion in the joint, considering it of far greater advantage to the patient to obtain a result which allowed

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motion, if only to a slight degree, even if the treatment was to last one or two years, especially as he could fall back upon operation later on if necessary. But should the case be one in which there is marked necrosis or rapid abscess formation, it means that the cartilages have been so eroded or destroyed that a cure with only partial motion is extremely doubtful, and any procedure calculated to eradicate the disease, shorten the duration of treatment, and produce a serviceable ankylosed joint is justifiable. So in Pott's disease; if we find a case to be in the first stage, before the vertebral articulations have been eroded, before there is evidence of abscess or of the slightest deformity, or before the X-Ray shows marked bone destruction, we should hesitate a long time before we perform an operation which, if successful, will eventually ankylose that spine to a certain extent above and below the area primarily affected, and so sentence the patient to a permanent rigidity of the spine, and by so doing greatly limit his usefulness, especially as conservative treatment in early cases does result in cure with motion. However in the second and third stages of the disease where we find marked bone destruction, abscess formation, and in most instances certain deformity, such operations have true worth. I will not attempt to discuss the merits of the respective operations, and will limit myself to that one originated by Dr. Albee as I feel that it should be heartily endorsed. Although I have seen quite a number of patients afflicted with tubercular disease of the vertebrae, I have operated upon but four of them personally, the first in 1913, and the last two weeks ago; the most decided being a man of heavy build, referred to me by Dr. Graffagnino, who had been paralysed for several months by a tubercular caries of the mid-dorsal region. He was operated upon upon in May and is now able to walk about comfortably. When such an operation is contemplated the patient should be first placed in bed, stretched upon a Bradford frame, or some such device, so that the Kyphosis may be gradually corrected, and a position of Lordosis or "Hollow back" produced; this hyperextension of the spine separates the diseased surfaces of the vertebrae, and an almost immediate improvement in the general condition of the patient is seen. This position should be maintained until the patient is thoroughly comfortable upon the frame, or if pressure symptoms were present, until they disappear; he is then ready for operation. Although an Albee electrical bone cutting

apparatus is desirable it is not essential, and the procedure may be easily carried out with a broad chisel; such a chisel as I now present to you may be made from what is commonly known as a ship carpenter's "calking iron" if a double beveled edge is ground on it. One first determines the length of the graft to be taken from the interior surface of the tibia; the graft should be long enough to lap over the spinous process above and the process below the diseased area, and be fashioned so as to conform somewhat to the curve of the deformity so that danger of fracture from bending will be lessened. After shaping the graft it should be left in position until the time for transplantation has arrived. One next makes a long curved incision to one side of the spinous processes running from the second process above to the second process below the diseased section; the incision goes through skin and fascia which are dissected up till the processes are past; all bleeding points are carefully tied off and the aponeurosis over the processes is split and dissected to each side; the tips of each process is split with a heavy plaster knife which facilitates the introduction of the chisel; each process should be split to its base with sharp, decided strokes of the hammer so that unnecessary pounding upon the spine may be avoided; the sides of the split processes are forced apart, and the graft taken from its bed in the tibia and immediately placed in position with as little handling as possible; beginning at one end of the graft, heavy sutures of No. 3 chromic gut are passed through the erector spinæ muscles and between the vertebræ, or through the base of each process, each being tied immediately over the graft while an assistant holds the graft well down between the halves of the processes; when the graft has been firmly sutured into place the aponeurosis on each side of the processes is sutured continuously, and the skin wound is finally closed without drainage. After the dressings have been applied a long pad of gauze is placed on each side of the spine to prevent pressure upon the operative field, and the patient is carefully rolled upon the frame again; he should not be disturbed unless absolutely necessary, and should be kept upon the frame for several weeks, after which time a plaster of Paris corset may be applied and the patient allowed up; firm support should be maintained for at least six months after the operation. I can imagine one taking great satisfaction in having relieved a patient afflicted with paralysis due to spinal caries by operative interfer-

ence, but I can also imagine one taking equal or even greater satisfaction in having cured a case of Pott's Disease and at the same time preserved motion in the affected portion of the spinal column.

Discussion of Dr. McIlhenny's Paper.

Dr. J. T. Nix: I enjoyed Dr. McIlhenny's paper very much indeed. I saw Dr. Allen a few weeks ago and secured from him the following synopsis of cases operated on by himself, as well as by thirty-three different surgeons:

Fred Albee, "Am. Jo. Orthopedic Surgery," March, 1916: A study of 539 cases of Pott's disease treated by the bone graft. One hundred and ninety-eight were the author's personal cases and the rest were performed by thirty-three different surgeons.

Conclusions: Of the total, 460 were cured, or 85¼ per cent; 59 cases were improved; 20 unimproved. Thirteen of the surgeons claimed 100 per cent arrest of disease.

Of Dr. Albee's cases, there were four deaths occurring within the first ten days post-operative, the cause being designated shock. Three of these were performed with the mallet and chisel. With his modern instruments, by using the electric motor saw, Albee performed the operation in fifteen minutes, without shock perceptible.

Ages of patients varied from twenty months to sixty-five years, the site of disease being anywhere in the vertebral column.

The early operation is strongly advocated as soon as a positive diagnosis is made and confirmed by the X-ray, as it shortens the operation, conveys less shock, fixes fewer vertebræ, and insures a more rapid recovery.

The operation, according to Albee, is applicable to all cases, at all ages, where pain or muscular spasm demands immobilization.

Robert Soutter, in his excellent book on Orthopedic Operations, just from the press, gives the following criticism: "In adults the operation is preferable to the brace or plaster treatment, as it shortens disability and the course of the disease. In children who live nearby and can be seen frequently, plaster or brace treatment is preferred. With paralysis, use recumbent treatment until recovery, then graft."

Dr. Danna: I am very much interested in the case that had paralysis. I would like to have Dr. McIlhenny tell us just what he found there on operation. Paralysis means pressure on the spinal cord, therefore it appears that the splinting process relieves this pressure. I think this operation is not done often enough.

Dr. E. Denegre Martin: These cases of Pott's disease are due to pressure and are as a rule relieved by extension. I recall a case brought to my service some years ago, a colored girl about twenty years of age, almost complete paralysis of lower extremities. We had no apparatus, so I hung her in the doorway, with a Boston bandage, for some time each day, in less than a week she moved her limbs freely, after the application of a plaster bandage she was able to walk around with perfect comfort. The great advantage of the Albee graft is that it ankyloses the desired point and thusly strengthens the spine at that point. Especially is this of assistance in adults as there is less liability to ankylosis in the rest of the spinal column from long confinement in a plaster jacket.

Dr. McIlhenny (in closing): As long as there is a chance of preserving motion, we should not ankylose the vertebræ by splinting operation. Many authors have taught us that operation can effect a cure in Pott's disease; however, we have no right to ankylose the spine when motion can be preserved.

In answer to Dr. Danna, I will say that the paralysis in most cases is due principally to inflammatory exudate and not to a great extent to long pressure.

REPORT OF SEVERAL CASES OF HYPOPHYSEAL DISEASE.*

By HENRY N. BLUM, M. D., New Orleans.

Mrs. T. M. P., Logtown, Miss., 40 years of age, came March, 1917, and complained of periorbital pains for one year and bad vision. Said she had been struck in the eye with a piece of wood one year before. Pupil in right eye slightly oval and conjunctival veins *R. E.* slightly engorged (pupils both eyes equal in size and react normally to light); vision R. E. 20-40 reading letters in the nasal field. Vision left eye 20-40. Examination with homatropin showed normal fundus both eyes except in the right eye the temporal portion nervehead slightly pale. Right hand, arm and leg larger than the left. Face broader than normal (patient says her face is broader than it was formerly). Upper, left, lateral incisor missing; lower teeth slant to right. On March 30, 1917, radiograph by Dr. Samuels shows very large sella turcica, this structure being several times larger than normal. Wassermann-negative. Patient returned September 18, 1917. Vision R. E. 20-200 doubtful, L. E. 20-70, some reading letters in nasal field.

Miss H. M., trained nurse, 22 years old, came July 11, 1916, complaining of pain in the right eye. Examination of R. E. showed the following facts—pupil 2 1-2 mm. L. E. pupil 2 mm. Anterior chamber O. U. normal. R. E. T+3, L. E. Tn. Fundus R. E. revealed typical glaumatous cup. Vision R. E. normal, L. E. normal. The accompanying chart shows field for form almost normal. If color field would have been made some abnormalities would no doubt have been discovered. There was present nævus over right side of the face from neck to forehead with much less on the back of neck and front of neck, shoulder and chest. Right leg and arm larger than the left leg and arm. Accompanying radiograph shows change in sella turcica.

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Flora E., 12 years old, seen first two years ago. Came to Touro Infirmary on account of failing vision. This child presents nævus right side of face and neck. Irregularly distributed on the chest and back of both legs, more on the right leg, as may be seen by the accompanying photograph. Note the sharp line of demarcation on the raphe of the upper lip, showing the difference between the healthy and the unhealthy skin. The R. E. shows an absolute glaucoma biphthalmus. An Elliott phrophining was done on this eye for relief of pain, but without success. The radiograph shows the changes around the sella turcica.

The next case was that of a colored woman, who visited my clinic at Touro Infirmary and complained of a failing vision. Despite the fact that there was 20-20 vision in each eye, there was decided paleness in both optic nerves with narrow arteries. The accompanying radiograph shows the enormous sella turcica. Wasserman-negative. Perimetric examination shows abolition color sense in R. E. and some narrowing of temporal color fields in L. E.

I wish it understood that this is in no sense a paper, or rather I should say a treatise or discussion in general on diseases of the hypophyses, but only a report of several inferesting cases which I thought you might care to hear.

Discussion of Dr. Blum's Paper.

Dr. T. J. Dimitry: Dr. Blum's paper is most apropos. It should be of interest to every man present, especially every eye man. Dr. Blum has given us very valuable information. Perimetric findings assist in making diagnosis clear in these cases. X-Ray examinations are of great assistance in diagnosis. Would like Dr. Blum to explain the absence of hemianopsia.

Dr. Blum (in closing): In my opinion there can be no confusion between these two kinds of patients. In the hypophysis, aside from the neighborhood symptoms, the remote changes of the body are very striking. So far as the perimetric findings are concerned, they are totally and absolutely different. In the one class of cases we find the typical, bitemporal hemianopsia, sometimes homonymous defects, sometimes unilateral amblyopia, and in the other class of cases we find the central and paracentral scotoma significant of re-trobulbar optic nerve inflammation.

THE AUTHOR'S DEVICE FOR THE LOCALIZATION OF FOREIGN BODIES BY MEANS OF THE X-RAYS.*

By AMÉDÉE GRANGER, M. D., New Orleans.

INTRODUCTION.

Early last summer, the highly esteemed Dean of the Graduate School of Medicine of Tulane University, Dr. C. Chassaignac, urged the members of his faculty to devote careful attention to the special needs of the Military Surgeon in the preparation of their course for the next session of the School. Accordingly, I investigated as thoroughly as I could the reports which had appeared in the American, French and English X-Ray Journals on the subject, "The localization of foreign bodies by means of the X-Rays," as practised on the European battlefield.

The result of that study can be summarized briefly, as follows:

1st: The fluoroscopic method of examination is almost universally employed;

2nd: The number of trained and experienced Radiologists is far below what is needed;

3rd: All the devices employed for the localization are accurate, and all make use of the well known law of triangulation;

4th: The number of the devices in use is about in proportion to the number of expert radiologists in the service, as most well known radiologists employ either their own devices or their modifications of some one else's device;

5th: The large majority of these devices are complicated and require for their proper use a technical knowledge and skill not possessed except by the highly trained radiologist;

6th: With the large majority of these devices the time required for the localization is too long for them to be of very great service except at base hospitals far in the rear of the battlefront where time is not such an important factor;

7th: In spite of the comparatively large number of devices already in use there seemed to be plenty of room for one which would be simpler in construction and so simple to use that any physician, having no previous experience with the X-Rays, could master the technic of its use in a short time; and requiring so few manipulations that the localization could be made with it within a very short time.

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As a result of experiments carried on in my laboratory during the last few months, I am ready to present to you at this time a small device which fills all these requirements of accuracy, speed, and simplicity.

Description.

The localizer consists of three parts, plate (Fig. 1), upright standard (Fig. 2), and pointer (Fig. 3), which can be quickly taken apart for transportation and as quickly assembled (Fig. 4) for use.

Plate (Fig. 1) is made of one-quarter inch aluminum with a square opening at (G.) Within this square is a cross (H) formed by two pieces of one-eighth inch bars intersecting at the center of the square, and having a small hole (H) through the center of the point of intersection. On the under surface of the plate (Fig. 1) are three guide lines (B. C. D.) made of one-eighth inch bars, these lines form two of the sides of the square (G) and one arm of the cross (H.) The other two sides (E. F.) of the square and the other arm of the cross (H) are formed by smaller and similar pieces of one-eighth inch bars. On the upper surface of the plate (Fig. 1, I) is a scale graduated in one-quarter inch divisions, beginning at the small hole (H) in the center of the metal cross (H). One portion of the plate is cut and shaped to receive the base of the upright standard (Fig. 2).

The upright standard (Fig. 2) is a machined rack (O) fitted to a base (K) which is movable on plate (Fig. 1) and can be fixed at any point on said plate (Fig. 1) by means of thumb-screw (L). On one side of the standard (R) is a scale graduated in one-sixteenth inch divisions. A small carriage (M) is movable vertically on the rack (O) by means of pinions operated by milled thumb-head (P). A small spring (Q) makes sufficient pressure on this standard (Fig. 2) to prevent slipping of the carriage (M). The carriage (M) holds a sleeve (S) to receive pointer (Fig. 3).

The pointer (Fig. 3) can be moved horizontally within the sleeve (S) and fixed at any desired point within it by means of the thumb-screw (U).

When the three parts are assembled (Fig. 4) the pointer (T) is held directly over the middle guide (C). The pointer (T) can be moved along this guide (C) in the direction of its length,

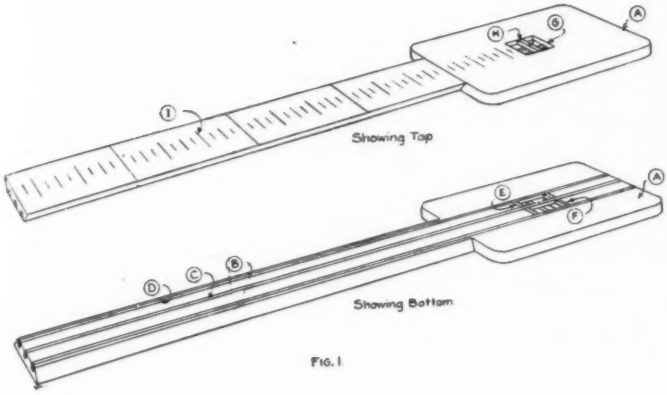

FIG. 1.

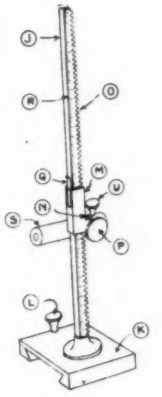

FIG 2. UPRIGHT STANDARD

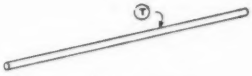

FIG. 3. POINTER

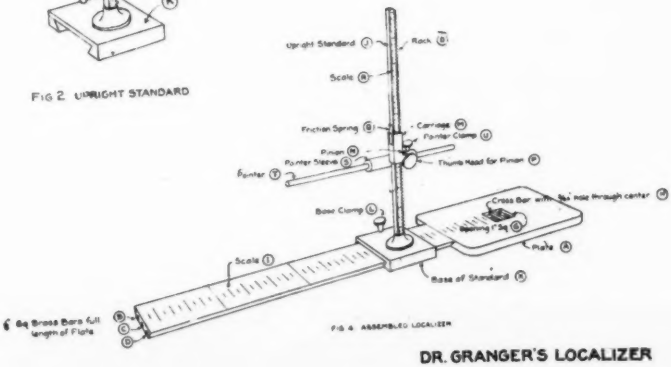

FIG 4. ASSEMBLED LOCALIZER

DR. GRANGER'S LOCALIZER

11-20-17

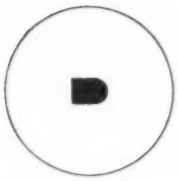

FIG. 5. SCREEN APPEARANCE AFTER FIRST STEP

FIG. 6. SCREEN APPEARANCE AFTER SECOND STEP

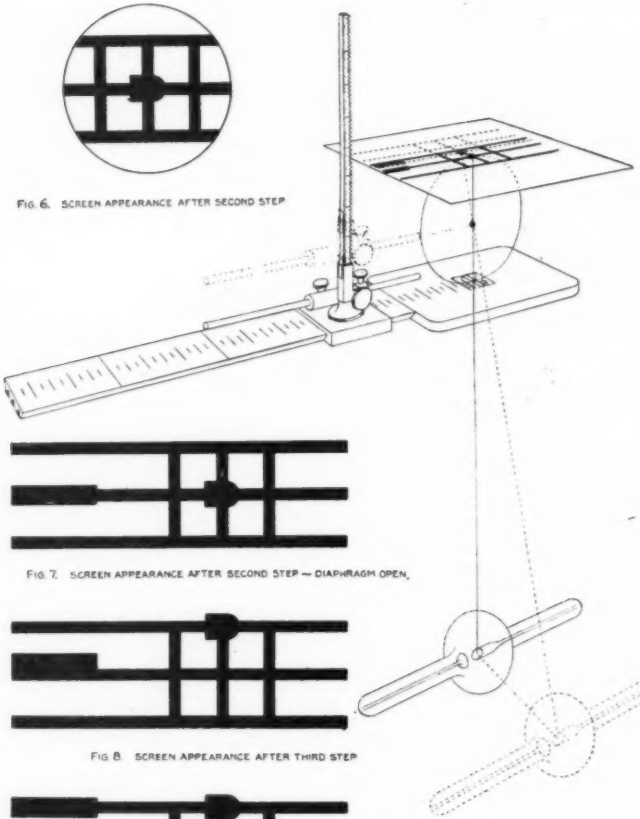

FIG. 7. SCREEN APPEARANCE AFTER SECOND STEP — DIAPHRAGM OPEN.

FIG. 8. SCREEN APPEARANCE AFTER THIRD STEP

FIG. 9. SCREEN APPEARANCE AFTER FOURTH STEP

CHART ILLUSTRATING
PRINCIPLE AND USE
OF
DR. GRANGER'S LOCALIZER

11-29

by sliding the base (K) of upright standard (J) on plate (A), and it (T) can also be moved to and from the plate (A) by turning milled thumb-head (P) which causes the carriage (M) and sleeve (S) to move up or down the upright standard (J). The distance from the end of the pointer (T) to the point of intersection of the cross arms (H) is read on the scale (I) on the upper surface of the plate (A). The distance from the center of the pointer (T) to the upper surface of the plate (A) is read off on the scale (R) on the upright standard (J).

TECHNIC OF OPERATION.

To locate a foreign body it is necessary to have besides the assembled localizer a transparent top table, and an X-Ray tube held in a holder or box provided with a diaphram, placed under this table and capable of being moved along the longitudinal axis of said table. The range of this movement need not be great, twelve inches will suffice for all cases. The patient is placed on the table, the wounded part lying over the X-Ray tube box or holder, and a fluorescent screen is placed over the patient.

The technic for the operation of my device can be divided into *four* short steps, as follows:

FIRST STEP; The diaphram of the tube containing box or holder, having been previously closed so that a circle of fluorescense only about two inches in diameter, would appear on the screen, the tube is moved until the shadow of the foreign body is seen lying in the very center of this small fluorescent area (Fig. 5).

SECOND STEP; The localizer is slipped under the patient, that is, between the patient and the table, until the shadow of the foreign body is seen lying over the intersection of the cross within the square hole in the plate (Fig. 6).

THIRD STEP; The diaphram of the tube containing box or holder is opened (Fig. 7) and the tube moved until the shadow of the foreign body leaves that of the central guide or central arm of the cross and assumes an identical position with reference to the shadow of one of the lateral guides (Fig. 8).

FOURTH STEP: The pointer chart is now raised by turning the milled thumb-head (Fig. 4, P) until its shadow moves over to and very nearly blends with that of the lateral guide mentioned in the preceding step (Fig. 9).

The pointer now lies on a plane with the bullet and indicates its depth in the tissues. These four steps were made in forty-five seconds in the case reported in this article. The pointer can now be pushed against a side of the part being examined and made to press against it (chart), marking it temporarily, and a needle passed through the small hole in the center of the cross (H), can make a temporary mark at that point of the patient. Both of the points can be marked later with a pencil of nitrate of silver, the one opposite the needle point would indicate a line passing vertically through the foreign body, the other mark opposite the pointer a line passing in the plane of the foreign body, that is, on a line with its depth in the tissues. Reading on the scale on the upright standard this depth is indicated in divisions of one-sixteenth of an inch. Now lowering the pointer and reading the scale on the upper surface of the plate the distance of the foreign body from the side of the part can be noted in divisions of one-fourth of an inch. Marking the skin and reading the scales could hardly consume more than fifteen seconds or at the outside, thirty seconds, so that the whole procedure including the localization, would take less than one minute and a half.

The chart explains the law employed—Law of Triangulation—and shows also the modus operandi. The solid lines indicating the first position of the tube and the pointer and showing the path of the rays and the relative position of the shadows as they appear on the fluorescent screen. The dotted lines indicating the changed positions of the tube (Step 2) and finder (Step 3) and showing the new path of the rays and the new position of the shadows as they would now appear on the fluorescent screen.

REPORT OF CASE.*

By E. L. LECKERT, M. D., New Orleans.

When Dr. Granger advised me that he was preparing a device for the localization of foreign bodies, I suggested that we test it, when completed, on a patient with a bullet in his hip, which Dr. Friedrichs and I had made an unsuccessful attempt to remove. This patient, a stocky, muscular boy of 19 years, was shot acciden-

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tally about a month and a half prior to the operation by a person standing twenty feet away, facing his right side. The bullet, a 32-caliber, entered the right hip one and a half inches below and one and a half inches posterior to the anterior-superior spine of the ilium. An X-Ray (anterior-posterior) located the bullet on the ilium just above the head of the femur. Being assured that the picture designated the bullet as being anterior and as the patient complained of tenderness under Poupart's Ligament and thought he could feel the bullet in this location, we felt confident of locating the bullet in this region.

After a thorough search of about an hour and a half through a large incision, we were unable to locate the bullet. A piece of silver wire was inserted in the wound, its end resting against the ilium where we thought the bullet should be and an X-ray requested taken in a semi-lateral position, and as the vertical rays fell in the same plane as the wire, the loop of wire outside the wound was all that appeared in the picture, and no further information was obtained as to the location of the bullet.

With the localizer described, the bullet was shown three and a half inches back of the incision which had been made on the lateral aspect of the hip and was on the posterior aspect of the ilium. Numerous tests corroborated the first findings and it was possible to measure the depth of the bullet, from both directions the posterior-anterior, two and a half inches, and lateral three and a half inches. These findings were marked and on incising over the posterior mark on the buttock, I was able to immediately put my finger on the bullet in the spot designated by the localizer. The measurements were taken and corresponded absolutely with those given by the localizer.

The localizer is simple in its operation, and foreign bodies are rapidly located. I do not hesitate to state that it does not require an expert to use it. Dr. Friedrichs was present at these tests and I am sure he will substantiate my statement that after witnessing a few demonstrations any intelligent person could use it. I repeatedly timed Dr. Granger, who was able, with the localizer under the patient, to locate the bullet in one-half minute.

EXEMPTION BOARDS AND THE MEDICAL MEN IN MAKING AND KEEPING UP AN ARMY.*

By LUTHER SEXTON, M. D., New Orleans.

Exemption boards are bodies of men co-operating to select a suitable army out of ten million citizens to win the victory for democracy. Our government and state owe a duty both to the dead and the living and also to the generations which are to follow. As medical men we have to do our part in assisting the army so that democracy shall not perish from the face of the earth and so that the ocean shall be free again. If our selection is bad in picking men for this work, we cost the government the expense of transporting a man, who is found deficient upon first trial at the cantonment, and do the individual an injustice. While all the aids to diagnosis should be used when possible, it must still be the clinician who can select the good from the bad virtually at sight without the aid of laboratory or refinements in diagnosis; they are to separate the ten million into the two classes of the fit and the defective. Men can only be maintained at their best physically when they are examined frequently; the leaky heart valves must be rested, the diet, exercise and drink must be regulated to reduce nephritic diseases, as heart and kidney lesions have increased thirty per cent. in recent years and now lead pneumonia in fatality. The United States must conserve its man power by every possible means. France has already lost more men in this war than she gained in birth rate since 1870. We must win this war by conserving the food and health at home as efficiently as we expect the army and navy to be on land and sea. Our doctors and soldiers are going to France to meet a shrewd military enemy, who has been preparing for this supreme test for half a century; —who are thoroughly equipped and well dug in. There should be no room for slackers or discontents left at home, but to the limit of our ability, moral and financial, we should back up our brave soldiers and allies who are going over the top to "No Man's Land," many of them never to return again. On account of its being fought on foreign soil, the war is not as popular as it would be if the United States were invaded; on this account, our exemption boards in some instances have toiled all day to certify only

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six soldiers. As found in the parable of the wedding feast the conscripts made many excuses:—one was so necessary to his business that it would go to destruction without his guiding genius:—another desired to escape on religious scruples, and the commandment "Thou Shalt Not Kill" as if our enemy was remembering the sixth commandment;—but the far greater part of those claiming exemption had married a wife, only after the draft law had gone into effect; so unwillingness on the part of many to volunteer property and person for the country's defense is in a way affording aid and comfort to the enemy.

Dr. Crile, just back from a base hospital at the front, says that the Central Powers are not nearly exhausted, that the war is not half over, that German prisoners are found to be well nourished, clothed and armed. He says there is no glimmer of dawn on the war's eastern horizon. If one million of our citizens are to be sent to the front, ninety-nine million should be conserving, working and saving at home. At the beginning of the war, in the United States only 2 per cent. of the medical men needed were in the service, whereas three-fourths of the British and French medical men under fifty are at present in uniform. If the United States send doctors to the service in the same proportion as Great Britain and France, we will have to send forty seven thousand instead of twenty-two thousand. Such exaggerated statements have been made about mortality among doctors at the front that it might be of interest to you to know that during the past three years of war only two hundred and sixty-six medical men of the British army have been killed outright and only one thousand two hundred and thirty-four wounded out of twelve thousand in service. The sanitation advised by medical men made the building of the Panama Canal possible after the French had failed to build the same, and our medical men in the army are playing no less important part by the prevention of typhoid and para-typhoid, small pox, malaria, typhus fever and tetanus.

Our local board number 10 called six hundred and seventy-six registrants, examined six hundred and thirty-seven, rejected one hundred and eighty, equivalent to twenty-eight per cent for causes as follows:— Weight and general conditions, suspt. T. B.—45, Heart— 30, T. B. Second and third stages—6, Acute Genito-Urinary—4, Feet—2, Eyes—29, Hearing—11, Teeth—1, Acute Syphillis—4, Paralysis—2, Mentally deficient—7, Hernia—18, Epi-

lepsy—2, Hemorrhoids—3, Loss of fingers—3, Legs—7, Arms—4, Goitre and Aneurism—2, Atrophy of limbs—3, Total—180.

It has been estimated that eighty per cent. of our colored population are luetic, and our ignorant and bibulous white population is a close second in this disease. Since typhoid, para-typhoid have been eliminated venereal diseases in one form or another have been the great disturbing factor of the army;—hence the insistance of the army and navy on placing no cantonment near a town or city with a legalized vice district. Segregated vice is often more damaging to an army than the bullets of an enemy. Every soldier who is out in a segregated district at night is expected to take a prophylactic injection upon his return to camp, but the rule is more often evaded than complied with because it is a demerit against a man to so report. Syphilis and its complication has been classified among the five best killers. It not only attacks all the soft tissues of the body, but honeycombs the nervous and bony structure, thus causing many rejections. While we found a few instances of acute syphilis and gonorrhea in the first stages, we saw many more in the second and third stages and especially was this true, of heart and nervous lesions in which tachy-cardia was the rule rather than the exception. Syphilis and gonorrhea are the national epidemics among soldiers exposed to the red light districts in any country. It is a well known fact among internists that when they are in doubt about a heart lesion to give the patient the mixed treatment, which is often followed with a remarkable improvement. Our profession as a body should stand for the abolition of all segregated districts. An educational campaign by lectures, good moving pictures, such as "Damaged Goods" and sex hygiene in which prudery is put to rout and in which venereal diseases are not treated as if no more important than an ordinary bad cold, but on the contrary in which the public should be made to know that any treatment for syphilis not covering a period of at least two years or after several negative Wassermanns, is quacking pure and simple.

The great expense of training a citizen into a soldier and transporting from home to cantonment is an unnecessary trouble to the government unless the exemption boards in the beginning have selected a subject suitable for the service. It would not be amiss in my judgment if the exemption doctor vaccinated the soldiers at their first successful examination against small pox, typhoid and

para-typhoid; the soldiers would then be practically ready for training when they arrive at the cantonment. No effort should be spared by the sanitary and surgical directors of the army to offer the soldiers the very best chance in the way of healthy environments and good hospital accommodations. Our profession at the front should do its work so well that every limb possible should be saved and every fracture so scientifically treated that few deformaties result. The army standards do not exact a perfect physical man and the exemption boards have been so instructed, but in trying to make this army of a million, the unfit found between the ages of twenty-one and thirty-one, has averaged from thirty to forty per cent. Among the principal causes are sight, bad teeth, light weight, defective lungs and heart, hernia, and luetic diseases. If one-third of our young men are thus diseased, what must be the percentage beyond thirty-one in our general population?

It should be the object and desire of our medical profession, who are unfortunately left at home to render fit all these minor defects in order to fill in the future drafts in the army. To the campaign before the public against cancer, T. B., and luetic diseases should be added the correction of all minor defects bringing up the physical standard of our citizens to the fitness for the army and navy, as well as the greater duty to be the fathers of coming generations. Now is the psychological moment for the general public to back up the medical profession in correcting these minor defects that now excuse one out of every three persons for military service. There should be no permanent exemption for refraction cases, minor surgical defects as hernia, hammertoe, hemorrhoids, bad teeth and many other conditions curable by minor surgical operations, and cutting down on the excessive use of tobacco and liquor in order to slow down the exaggerated pulses.

Wine, bad women and venereal diseases come in natural sequence: the medical profession therefore should stand as one against the excessive use of alcoholic beverages and exposure to commercialized vice, so that our young men who return from the war shall not be shot to pieces by venereal diseases. It may seem a hard thing to say but it would be better for the future of America if no serious syphilitic person return from the war to entail his misery and disease upon unborn generations at home. The greatest danger to a young soldier in a wide open cantonment

is not bullets but the temptations that go with and overcome his feeble resistance to the lust of the flesh.

The way we detected malingerers, who claim that they could not hear was by asking questions at a distance of twenty feet with their backs turned and one ear covered. "Do you not feel that the oceans should be free to travel and that the United States have been outraged? Do you not want to back up our President? How much did you give the Red Cross, Y. M. C. A. and K. C. drive?" Then suddenly ask at a lower tone of voice, "On what grounds do you claim exemption?" "Are you not the only support of your family?" In this way, you will get an answer to a lower tone of voice. We always referred to the clinic or doctors who have been treating a man's eyes or ears, for information, but as this work was gratuitous we sent eye and ear cases, which we could not determine, to the office of a specialist instead of asking them to lose from four to six weeks time from their practice. Tobacco and whiskey hearts and excitement of the examination account for many having fast pulse, for which due allowance must be made. If there is no organic murmur, or only a functional nervous disturbance or anemic murmur, army training, regular food, sleep and cutting the allowance of the chain smoker and regular tippler, will often reduce the fast pulse to normal. About the best thing that can happen to the confined office man who really never has any exercise, harder than inhaling a cigarette, is to send him to the army camp, cut out his booze and cigarettes and watch him grow under regular exercise, proper and well cooked food, and sufficient sleep. Our climatic conditions and cosmopolitan forbears make our soldiers ten to twenty per cent. lighter in weight than soldiers in colder climates, and from more hardy races. However light weight is not so much an objection when we remember that ex-Confederate General Wheeler and Winston Spencer Churchill were only slightly above the hundred and ten pound limit. Again, having no excess avoirdupois ought to enable a man to advance and retreat with more ease. The real hard question for the medical examiner to determine is whether this light weight is dependent upon heredity, environment, lack of sufficiently and properly cooked food, or whether it is caused by lung or some other serious disease. The medical examiner should be a good clinical diagnostician, more handy with his stethoscope, and urinalysis, than the more refined diagnosis of the laboratory and microscope,

which, in examining from fifty to seventy men per day, the doctors have very little time to use. We found many first stages T. B. cases who did not know themselves afflicted with the disease, but fortunately they were in the curative stage, if they heeded the advice given them, which was at once to consult their family physician about the proper diet, medication and mode of living. On account of our warm climate, many T. B. cases from colder climates come to live in New Orleans and our own population and T. B. Houses already contain perhaps five thousand open and ten thousand concealed cases. Our general death rate from consumption in the United States in one year amounts to as many men as we now have on the French Battle Field. Our million and a half consumptives in America call for twice as many beds as in all of our cantonments combined; so with physical signs of T. B., light weight, anemia, and evening temperature such cases should not be sent to the cantonment where they will prove a liability instead of an asset to the army.

In concluding, we wish to say that the medical men of the exemption boards have the unqualified help and support of the lay members, and the enclosed clipping gives Provost Marshall General Crowder's estimate of the boards efficiency.

General Crowder pays tribute to the zeal and patriotism of more than thirty thousand men who compose the machinery of the selective system. With only ten weeks for the task, the first national increment of six hundred and eighty-seven thousand was drawn, he says, by a nation "moving breathlessly, supported by the governors of the states and by the members of the selection boards with a patriotism, devotion and unselfish zeal that remains an inspiration." "You are, in effect," he added, "a part of the army of the United States, in that you are the source of its supply. The nation is rapidly becoming a great system, and, if this part of it were disturbed, it is not too much to say that the system would be shattered so effectively that it would take weeks, if not months, to repair the damage."

Dr. A. G. Friedrichs presented the following case:

Male, colored, fracture of mandible at the angle. The Doctor maintained that a fracture of this type, can only be handled by wiring, to bring the teeth in correct occlusion, so that that mandible will perform its normal function as before.

PROCEEDINGS OF THE AMERICAN SOCIETY OF TROPICAL MEDICINE

ADENOMYCOSIS.*

By DR. EZEQUIEL C. DIAS,
The Oswaldo Cruz Institute (Bello Horizonte Branch), Brazil.

(Translated for the JOURNAL by Dr. A. McShane, Greenwood, Miss.)

Having been courteously invited by this learned Society to read a paper on some subject relating to tropical pathology, it occurred to me that it would be better to present a collection of personal ideas and investigations instead of a question full of controversy.

It must be stated, however, that my thesis does not deal exclusively with tropical medicine. It relates, rather, to an ailment that does not exhibit climatic preferences, but forcibly attracts the attention of physicians who work in warm climates, especially in the State of Minas Geraes (Brazil), in the capital of which (Bello Horizonte) the Oswaldo Cruz Institute maintains an affiliated laboratory.

The affection referred to is Pseudoleukemia, also called Hodgkin's Disease, Lymphogranulomatosis, etc.

When I undertook the etiological study of this disease I was unacquainted at the time with some valuable works on this subject that had recently been published.

At about the same time other publications appeared in the United States and Germany, which were all in accord as to the bacterial nature of the disease. Among other authors, Frænkel and Much, Bunting and Yates, Negri and Mieremet, Billings and Rosenow, F. Blacke, H. Fox, Verploegh and Kehrer, etc., seemed to demonstrate that the etiology referred to was due to a bacterium, to which was given the name *Corynebacterium Hodgkini*, or *Bacillus Hodgkini*.

However, that was not the conclusion that I reached. According to my studies, the germ of the disease was a polymorphous fungus, found in the affected lymphatic glands, and even in the peripheral blood of the patient.

This disagreement in results—those of the foreign investigators and my own—led me to believe for a while that the morbid entity

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prevailing in Minas was not the same Hodgkin's disease that was investigated in Europe and North America. Hence, I was driven to the necessity of distinguishing the two things, thus reconciling the apparent discrepancy in the two series of studies. I then wrote a preliminary note, in which I advanced the hypothesis that my clinical cases were of a disease not previously described; and, as it was then impossible to resolve my doubts immediately, I decided to call the disease Minas: *Adenomycosis endemica.*[1]

At the present time, however, there is no room for any such doubt. In every respect the two diseases are the same; the clinical descriptions correspond to each other, and I do not hesitate to affirm the universality of the nosological type which Hodgkin was the first to describe.

In spite of the consideration due to the foreign writers already mentioned, I cannot efface the studies which I have modestly undertaken. I am convinced that we are dealing with a mycosis; and, while I await an opportunity to compare the material of the North American investigators with my own, I hope and expect that we will arrive at the same conclusion; that pseudo-leukemia is due to a fungus.

At the same time, I see no reason for withdrawing the name of *Adenomycosis* from Hodgkin's disease, since it seems to express and emphasize the preponderating elements of this disease.

Furthermore, another fact of great importance deepens my conviction in regard to the mycotic nature of Pseudoleukemia, and that is that a series of investigations which I carried on with the view of clearing up the etiology of leukemia,[2] I reached the conclusion that this latter disease is also due to a fungus, which I called *Adenomyces leucemiæ,* the resemblance of which to the germ of Adenomycosis is truly remarkable.

This matter does not come within the purview of the present paper, and I reserve it for another occasion. In any event, this slight reference scarcely serves to demonstrate that the harmony that exists between the morbid processes of leukemia and pseudo-leukemia is also confirmed by etiological analogy.

ETIOLOGY.

In an article which will be published in the Memoirs of the Oswaldo Cruz Institute there will be shown drawings and other illustrations which will explain the text of the work referred to.

In the impossibility of explaining now the etiological part, I will merely give a summary of its most characteristic features.

By puncturing a hypertrophied gland (one that is covered and without the least sign of suppuration), under strictly aseptic precautions, we can find in the ganglionic juice a series of polymorphous microbian elements which can only be classed among the pathogenic fungi.[3]

In order to systematize the description, I am accustomed to divide the microbean forms into the following groups, the designations of which have only an arbitrary value:

(*a*) Bacilliform elements;
(*b*) Yeastcells;
(*c*) Oblong forms;
(*d*) Hyphæ;
(*e*) Indeterminate forms.

(*a*) *Bacilliform Elements.*—As their name indicates, these are similar to bacilli, but bacilli *sui generis,* of different sizes, from the smallest, which are without definite structure, to the largest, which have the aspect of anycelial filaments, provided with metachromatic granulations, either bright or slightly colored. They are most numerous in preparations made directly from ganglionar juice.

(*b*) *Yeast-cells.*—These possess a double-bordered membrane, are usually smaller than those of Blastomycosis, multiply by germination, and almost always contain metachromatic granules. Perhaps the name of *conidio-levulæ* would be applicable to some of these cells, according to some mycologists, notably Piney.

(*c*) *Oblong Forms.*—These are not common, but in rich and well made preparations—which are rare. They can be seen of varying sizes. These corpuscles are notably similar to the so-called forms *en navette* of *sporotrichosis.* Besides a capsule, which may be visible or not, they also present metachromatic granules, and sometimes various phases of division.

(*d*) *Hyphæ.*—These are still rarer, but they exist in certain lesions. They are found in some smear preparations, but are almost always deformed, because they are torn in consequence of the violent puncture to which the ganglion has been subjected.

(*e*) *Indeterminate Forms.*—These forms are neither bacilliform elements nor yeast-cells, but a mixture of all of these. At times

they have the appearance of small cocci, at times of diplococci, and again of small bacilli or cocco-bacilli, either grouped or separated; in short, they have no well-defined morphology. However, though they have strange forms, they constitute, in fact, a part of the etiological picture. Besides this, they have other forms, much rarer, which shall be described later.

All these elements, which are proper to the swollen lymphatic ganglia, can also be seen in the circulating blood of the sufferers. Here, however, the investigation is much more difficult, because, in this case, the mycotic forms are much rarer than in the ganglionar juice. In order to carry out the investigation, it is necessary to employ a technic which will be described in a special article.

CULTURES.

It is not always feasible to obtain direct cultures—that is, by sowing ganglionar liquid in suitable media. These are the malted glucosated and saccharated media of Sabouraud.[4]

The inoculations are made with ganglionar liquid obtained by means of a puncture, since the patients object to extirpation of the ganglia.

The cultures are obtained in about 50 per cent of the cases. Sometimes they develop rapidly, more or less in the first twenty-four or forty-eight hours, sometimes after a week or more. They are indifferent to temperature; when cultures are positive, they develop well, whether in the incubator or in the room.

The characters of the cultures are very variable; however, we may consider the following type as one of the most common: At the commencement, whitish or yellowish colonies form (sometimes with both colors), smooth, moist, depressed or not, of slight consistence, with a tendency to flow along the length of the tube, principally when the latter is held in a vertical position, forming finally a pasty mass at the bottom, half liquid, half solid, which recalls the consistence of certain jellies. In this state, the culture can be preserved a long time; this character seems to be definitive, and not transitory. At times it grows, fades and dies before changing this appearance. But when it is transplanted repeatedly in other media, the primitive jelly takes form; it solidifies, and the gas bubbles disappear, though they were frequent at other times; it finally results in a pure, complete culture of a fungus. Then we see rugæ, depressions, prominences and other irregularities on the

surface, which was at first smooth. But these accidents, themselves, are very variable, and undergo new modifications.

Another cultural type is the following: The usual semi-liquid consistence is not observed. The culture may be consistent at the beginning, and then break up into ridges, which happens, as a general rule, to all mycotic cultures.

Finally, both these types may fructify. It is true that this does not always happen, and the culture retains its primitive aspect; but a large number of them fructify when they are old.

Fructification likewise presents diverse modalities. Pleomorphism is not rare, but the following type may be taken as the commonest: When a culture grows old, or the culture medium loses its moisture, or from some unknown circumstance a rough layer forms, of a white or yellowish-white color, passing gradually from one to the other, this layer is like a layer of débris irregularly spread on the surface of the culture, especially in the upper part of the tube, at the point where the agar first dries up.

This type of sporulation forcibly recalls that of certain cultures of Actinomycosis, which cultures of Adenomycosis resemble, even in the matter of pleomorphism.

As before stated, it is impossible to describe now all the modalities of fructification that this fungus may present. I must state, however, that the mode of fructification in corymbs described in the second preliminary note, published in the *Brasil Medico,* does not belong to the morbific agent of adenomycosis. It was a contamination, which becomes grafted on some cultures, giving them that bizarre aspect which, for a time, led me to suppose that it was proper to the fungus in question.

Microscopic Study of the Cultures.

Knowing already the polymorphism which distinguishes the germ when it is encountered in the lesions—that is, in the hypertrophied ganglia—it is easy to conceive that in cultures the same germ should present itself under various forms. These forms are reducible to two types:

First type: When we examine a preparation from a recent culture, that which arrests attention, as a rule, is the presence of numerous bacilliform elements, either with or without metachromatic granules; along with these there may be few or many indeterminate forms (similar to cocci, cocco-bacilli, diplococci, etc.), and, besides these,

though rarely, yeast-cells. These may be entirely wanting, or else so few in number that it is difficult to find them.

To summarize: That which predominates in the microscopic organization of this cultural type (which corresponds more or less to the macroscopic type in gelatin) is the bacilliform element accompanied by the indeterminate forms. This combination misleads an observer who has not been forewarned, and who goes further astray the longer he continues the investigation. In fact, with the flight of time, sometimes at the end of several months, this element develops forms that are clearly filamentous, which are slowly transformed into a mycelium, accompanied by the respectitve conidia, and yeasts of oblong forms, etc. In fine, it acquires all the macroscopic and microscopic characteristics of a culture of a fungus.

The second type corresponds more or less to the other macroscopic type, which we may call *toriform,* which very soon becomes solid and with the macroscopic appearance of mycotic cultures. In this, the feature which preponderates, from the very beginning of development, is the large number of yeast-cells, which multiply by germination, and frequently appear moniliform. However, in different specimens of these cultures it will not be very difficult to discover some bacilliform elements interlaced with the mycelial filaments.

After a time, which varies with different specimens, all of the cultures can be confounded with one another.

From all of the foregoing, we conclude that long waiting and careful observation are indispensable in order to understand the versatility of such cultures, and the morphological variations which they are capable of presenting in their late development and in their capricious organization.

I have confined myself to the description of these two types, which are the most common, leaving aside the intermediate types and the aberrations, which are not very exceptional.

PATHOGENIC ACTION.

It is well to remember that, in the still obscure chapter of the already known human mycoses, which have been more or less studied, there always exists a part which leaves much to be desired, namely, that of inoculation. It is true that some experiments have been made to try to determine the pathogenic action of the fungi that are the causes of the principal mycoses. But nearly all

the good authors refer to the uncertainty of this experimentation, especially in regard to blastomycosis, actinomycosis, and even sporotrichosis.

However, in certain lucky inoculations, satisfactory results were obtained, as those of Gaspar Vianna in blastomycosis, who produced in the monkey lesions very similar to those observed in man. In spite of this, it appears that the number of negative experiments is greater than the number of positive.

This remark should prepare the reader to expect to encounter the same inconstancy in results in the case of adenomycosis.

In fact, when virulent material is inoculated (ganglionar juice of the patient, or blood, or cultures), we find a notable percentage of conclusive results, which thus proves the etiologic action which is the object of this paper.

Several animals are inoculable: the rat, the guinea-pig, the monkey. But the animal most susceptible to adenomycosis is the *camondongo,* which rarely escapes inoculation, dying of septicemia, and presenting the mycotic forms in the blood and viscera.

The other animals are also accustomed to succumb to the inoculations, principally when these are made intraperitoneally. Also, inoculations at the root of the tail and on the paws do not give bad results. Subcutaneous inoculations, as a rule, are the ones that give the most precarious results.

The duration of the experimental disease is worthy of notice. It is also very variable; mostly it lasts a month, or even longer. But this is not an exclusive quality of this mycosis, for it is common to all, or almost all, of them; at any rate, of those already referred to.

Inoculation in the guinea-pig has a particular significance. It serves to exclude the hypothesis of ganglionar tuberculosis. This is all the more valuable since, when there is concomitant tuberculosis, the guinea-pig does not fail to reveal the reaction and the specific bacillus, at times along with the fungus of adenomycosis, thus resembling experimentally the clinical cases from which the inoculated material was obtained. In these cases, in which the two infections co-exist, sooner or later there occurs suppuration or caseation of the hypertrophied ganglia. In the uncomplicated cases of Hodgkin's disease, the evolution of the experimental infection, not only in the guinea-pig, but in the other susceptible animals, is exempt from suppuration; there is engorgement of the

lymphatic ganglia, almost always moderate, reminding us vaguely of the morbid process which attacks the human lymphatic ganglia.

CLASSIFICATION.

I have not yet sufficient material to enable me to classify the morbific fungus of Adenomycosis. For this purpose a prolonged and careful study is necessary, which, in spite of its difficulties, I am striving to carry out. Let us add that the present state of mycology is not absolutely flattering. Any one who consults the best authors will see the confusion that reigns in this department of botany.

We see that it is indispensable to give a name to the present germ; so, I now give it the provisional name of *Adenomyces Cruzi,* thus rendering small but sincere homage to the memory of the unforgetttable master which science and the Brazilian Fatherland have just lost.

The case being as above stated, a new genus remains created, whose place perhaps is not far from the *Ascomyces.*

CONCLUSIONS.

First. The causative agent of Hodgkin's disease, pseudo-leukemia, etc., is an extraordinary polymorphous fungus, which is found in the lymphatic ganglia of the patients, is cultivable, and is pathogenic for laboratory animals.

Second. In view of this etiology, the name of Adenomycosis may be given to this disease.

Third. Leukemia is also a mycosis.

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2. Ezequiel Dias: Pesquisas etilogicos na leucemia (nota previa), *Brazil Medico,* Anno 29, No. 39, page 305.

Idem, Pesquisas etilogicas na leucemia (second nota previa), *Brazil Medico,* Anno 29, No. 42, page 329.

3. It is to be remarked that this investigation is difficult. All depends on a happy puncture, which should reach the regions of the lymphatic ganglions, where the germs are found, and are developing. This does not always occur.

4. The saccharated gelose is prepared as a kind of caramelized cane sugar—the *rapadura*—which is well known in the interior of Brazil. This medium, which I have used for more than three years, supplies perfectly the malted gelose of Sabauraud, which passes as the culture medium *par excellence* for fungi.

BERI-BERI IN BRAZIL.*

By DR. CLEMENTINO FRAGA, Bahia, Brazil.

(Translated for the JOURNAL by Dr. A. McShane, Greenwood, Miss.)

In Brazil, beri-beri was first recognized in Bahia. Silva Lima suspected the existence of the disease when he saw three cases with symptoms similar to the beri-beri from India.

The first observations of this famous Bahian clinician date from 1863, but it was only in 1866 that he published them in a series of articles with the title: "Contribution to the History of a Disease Which Actually Reigns in Brazil, Under the Epidemic Form, and Characterized by Paralysis, Edema and Weakness."

In 1872, Silva Lima collected his articles in one volume, amplifying the text and adding new observations. To this magnificent book he gave the title: "Essay on Beri-beri in Brazil."

It was in 1866 that the city of San Salvador, capital of Bahia, suffered its first epidemic incursion of beri-beri. Silva Lima then classified accurately the clinical forms as *paralytic, edematous* and *mixed*, gathering thirty-two observations, with some necropsies.

When the existence of beri-beri in Brazil was once proclaimed it did not take the medical profession long to study the disease in other parts of the country, and soon it was noticed as existing in other States of the North, and in Rio Janeiro.

In 1871, Dr. Sá Pereira observed on the Recife an epidemic in the House of Detention. Costa Alvarenga diagnosed the disease in Rio de Janeiro in 1872. Torres Homem, shortly after, studied the disease in his memorable clinical lectures in the Faculty of Rio, and Lacerda, since 1884, never ceased to study the etiological factor of the disease. Later came other works, in more recent studies, which, in their turn, will receive due mention in these lines.

Let us glance rapidly at the dissemination of beri-beri in the different regions of Brazil.

To begin with Amazonia: Fareira de Lemos refers, in the *Gazeta Medica de Bahia,* to the already established existence of beri-beri in Amazonas in 1867. In Manaos, according to the testimony of Prof. Marci Nery, from 1897 to 1904, 830 fatal cases of beri-beri were registered. This number has been noticeably diminished in these latter years, and, according to Dr. Figueredo

* Read by title before the American Society of Tropical Medicine, New York, June 5, 1917.

Rodriguez, from 1912 to 1915 there were scarcely 173 deaths from beri-beri gathered in the demographo-sanitary statistics of that city. Still, we should not forget the remarks of the observers of that region, that many cases of polyneuritis are ascribed to beri-beri, which, with as much reason, could be ascribed to paludism, alcoholism and plumbism. Lovelace, an American physician who directed the medical work of the Street of Ferro Madeira-Mamoré, says that beri-beri is frequent in the pathology of that region, though this does not appear from his figures, since, out of 30,430 patients from 1908 to 1912, he gives 963 cases of beri-beri and polyneuritis. Allen Walcott, his successor in the same service, considers that the disease does not depend on local insalubrity, but rather on the quality of the food provided.

The recent studies of Carlos Chagas on the epidemiology of Amazonia prove that there is no scientific basis to the current ideas on the frequency of beri-beri in those regions. In fact, Chagas found in the blood of patients, who have been supposed to be suffering from beri-beri, the hematozoön of malaria under a new variety of quartan ague.

Necessarily, the *galloping beri-beri*, which is one of the terrors of the Valley of the Amazon, was shown by the studies of that Brazilian *savant* to be a "myth that did not bear up under the exact epidemiologic analysis of those regions." And then the so-called "galloping beri-beri" is nothing more than a malignant form of malaria, in which the patients rapidly become paralytic, the paralysis extending from the legs to the arms, and rarely reaching the digestive organs and the respiratory apparatus, and ending in death in a short time. The autopsy in such cases always showed the capillaries of the central nervous system were filled with the parasites.

Beri-beri in Amazonas thus remains considerably reduced. Official data must thereby suffer, since well-conducted studies will be the cause of affiliating many supposed cases of beri-beri with the dominant morbid condition of the vast regions of Amazonia—that is, malaria.

In regard to Pará, the same considerations apply. Dr. Americo Campos corroborates this view. He thinks that beri-beri is not frequent in Belem, since, in the interior of the State, cases are enrolled under beri-beri that have only a symptomatic resemblance, but do not justify the diagnosis.

In Maranhao and Pernambuco a few observers, of more distant epochs, allude to epidemics of beri-beri without certain information in regard to the identification of the disease. Dr. Sá Pereira, who admits a fourth form of the disease, *without paralysis or edema,* speaks of an epidemic in the House of Detention. Of late years the extension of beri-beri-in the northern States has not been observed, since it appears that it is less frequently diagnosed as its special clinical attributes become better known.

We now come to Bahia, where the disease was first identified, and whence numerous scientific publications have come since the time of Silva Lima.

We have already referred to the studies of Silva Lima. Afterwards, in chronological order, appeared the words of Julio de Moura and Jannario de Farei in 1869; of Almeida Conto and Saravia, *thèses de concours,* 1871; of Ribeiro da Silva and Jeromino Sodré in 1873; of Pacifico Pereira, under the title, "Studies on the Etiology and Nature of Beri-beri," in 1881; of Pacifico Mendes, "Contribution to the Study of Beriberi," in 1884; de Nina Rodriguez, on "The Differential Diagnosis Between Beri-beri and the Polyneurites," in 1890; of Ezequiel Britto, Ramiro Monterio and Alfredo Britto, in memoirs presented to the Third Brazilian Congress of Medicine, in 1890; of J. Soledade, in 1904, on the hematology of beri-beri, who, after fifteen observations, arrived at the following conclusions: "Blood of normal color, coagulation index between 1′40″ and 2′40″, density 1064028, hemoglobine 65 per cent, red corpuscles 4937428, leucocytes 8735, neutrophiles below normal, eosinophiles and transition-forms above normal, small lymphocytes sometimes increased, large lymphocytes always in large proportion."

Various theses for the doctorate in medicine were presented to the Faculty of Medicine which reflect the state of knowledge of the disease at the time in which they were written. Among them are those of Drs. C. Rocha, J. A. Mello and Ferreira Velloso in 1877; E. Ribeiro in 1878; Pereira da Silva, Ottora Toscani, J. Ignacio, Bandeira, Morethson, Figuerredo, Amaral, V. Martins, Sá Carnero, Cerqueiro Souza, Mello Moraes, Souza Dias, Mello Gomes, F. Reis, A. Pinkeiro, in 1879 and 1880; Branlio Pereira in 1881; Faria e Silva, H. Monteiro, L. Gualberto, Perdigão in 1883; A. Texeira, A. Rodrigues, Pincheiro, Montenegro and Duarte Pereira in 1885; Starling in 1890; Santos Neves in 1892; J. Santa Thereza in 1893;

Ignacio da Silva in 1900; João Soledade in 1905; R. Oliveira in 1908, and F. Veiga in 1915.

In 1916 I presented to the National Academy of Medicine a memoir entitled, "Beri-beri or beriberic Syndrome?" in which I defended the nosological anatomy of beri-beri. I gave notice in this work of my first observations, made with the aid of my assistant, Dr. A. Barbosa, for the purpose of provoking the reactions of the vegetative nervous system in beri-beri, by the investigation of the oculo-cardiac reflex and by the tests of adrenalin, pilocarpine and atropine, successively administered by hypodermic injection. Our observations, which now number more than ten, reveal an increased excitability of the sympathetic nervous system.

Again, in 1916, I published a study on "Beri-beri in Bahia," in order to commemorate in a special number, the fiftieth anniversary of the *Gazeta Medica da Bahia*," which I have used in these lines.

At the present time one of my pupils, Medical Student Arlindo Assis, is undertaking, by experimental studies, to determine the alimentary etiology of beri-beri according to the methods of modern authors, such as Eykmann, Takaki, Frazer, Stanton, Suzuki, Odaké, Gryus, Funck, Rénaut, Weil, Moriquaud, Michel, Holst, Frolich, etc., whose works have greatly contributed to elucidate the everlasting question of the etiopathology of beri-beri.

Reviewing the records of the clinical register of Santa Izabel Hospital, the most important establishment of the kind in Bahia, since the time the disease was first discovered there—that is, since 1866—we succeeded in finding a total of 914 cases in fifty years; and in the last ten of those years, from 1906 to 1916, only 193 occurred, which corresponds with the diminution of the number of patients in the city.

In Bahia, the prisons and asylums have suffered principally from epidemics of beri-beri, it having been found several times in the Hospital de Marinha, in the barracks at Palma, in the penitentiary, and in the Asylum of Sao Joao de Deus. This last establishment has been more or less attacked, suffering almost annually from epidemic outbreaks, some of which were very violent. Thus, in 1904, there were 136 lunatics in the asylum, of which only 66 remained in December: almost all of the deaths were from beri-beri. In the last three years, new epidemic outbreaks occurred: there were thirty cases in 1914, fifteen cases in 1915 and twenty-six cases in 1916.

In the State Penitentiary, now extinct, there were, in 1880 and 1881, no less than 432 cases of beri-beri, nearly all of them being sailors disembarked from warships.

Apart from the asylum, beri-beri has not manifested itself in Bahia in an epidemic form. This shows its decrease, and is in accord with the data furnished by demographo-sanitary statistics.

Passing to the South of Brazil, we see that beri-beri is found in Rio de Janeiro; it raged as an epidemic in Minas, and furnished a few cases in S. Paulo.

Dr. Theo. de Almeida, in his work on "Beri-beri in Brazil," states that, until 1885, beri-beri does not figure in the sanitary statistics of the capital of the Republic, adding that "to-day it may be regarded as totally eliminated from the diseases of Rio de Janeiro."

In 1907, Dr. Julio de Novaes observed an epidemic of beri-beri in the "Fifteenth of November School," and Dr. Ed. Meirelles described nine cases in the House of Detention, among about 800 inmates.

In regard to beri-beri on board our ships, the so-called "ship beri-beri," the cases on the corvette Vital de Oliveira, in 1880, and of the cruiser Nictheroy in 1883, were notable for their high mortality. On other vessels of our navy, including the training-ship Benjamin Constant, beri-beri has shown itself, but was not unusually fatal.

There is no doubt that beri-beri appears most frequently on old vessels, in which the accommodations for the crews leave much to be desired in regard to hygiene. It is certain that, in our new vessels, like the S. Paulo and the Minas Geraes, the disease has also been found.

Many works on beri-beri have been written in Rio de Janeiro. We need only mention those of Torres Homen, Martins Costa, Francis de Castro, Lacerda, Almeida Magahaens, Fajardo, Miguel Couto, Austregesilo, Henrique Duque, Aloysio de Castro, Julio de Novaes, Oscar de Souza, Lima Freire, Edouarde Meirelles, Theophilo de Almeida.

In Minas Geraes, beri-beri in epidemic form was observed in the seminaries of Diamantina, Mariana and in the Caraca, which, though attacking a large number of alumni, caused only a few deaths.

There were only a very few cases in the entire State of S. Paulo;

in epidemic form, we know only of the Hospice Juquery, related by Dr. Francisco de Rocha.

There is nothing definite in the medical literature of Brazil concerning the Southern States of the Republic; the less recent outbreaks do not deserve much confidence, since the diagnosis is set down without due regard to the differential diagnosis of polyneuritis.

It is not to be denied that, when beri-beri was first recognized in Brazil, many cases were called beri-beri in many places without making an exact diagnosis.

Later on, there occurred a reaction against such exaggerations, and the figures for beri-beri continued to decrease, *pari passu* as the disease became better known by its clinical phenomena as distinguished from polyneuritis.

However, there is no doubt that beri-beri exists in Brazil. It exists and declares itself by clinical signs, even though its etiology still remains vague and undecided.

CONTRIBUTION TO THE STUDY OF INTESTINAL HELMINTHIASIS IN BAHIA.*

By DR. OCTAVIO TORRES, Bahia.
(Translated for the JOURNAL by Dr. A. McShane, Greenwood, Miss.)

In response to the courteous invitation of Drs. Bailey Ashford and John Swan, President and Secretary of the American Society of Tropical Medicine, to write on some subject related to tropical pathology in Bahia, we decided to collect certain scattered data on intestinal verminoses. This subject is at present largely occupying the attention of the North American physicians, as well as those of Brazil, especially so since they were aroused by the note of alarm sent out by the illustrious Prof. Miguel Pereira.

For a long time we have studied verminoses among us. We wrote an article on this subject that was published in the commemorative jubilee number of the *Gazeta Medica da Bahia,* entitled "Verminose Intestinal Endemica e Latente na Bahia," and, from the studies then made, we reached the conclusion that it is rare to find an individual in our midst who does not harbor intestinal worms. The following percentages were found: 95.45 per cent in (apparently)

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normal individuals; 98 per cent, 99 per cent, or even 100 per cent in individuals who go to the hospital.

We will here reproduce some of the data from the article above referred to; we will then draw up statistics of the examinations of the feces of the patients seen in the medical clinics (first and third chairs of the Faculty of Medicine of Bahia), and, finally, we will draw some conclusions from these statistics.

With these ends in view, we must confess, at the outset, that this is not a complete work which we present, but a simple contribution to the study of intestinal verminoses in Bahia; they are data which, in conjunction with others, will some day, perhaps, complete our modest work.

Ever since we were intern of the first chair of Clinical Medicine of the Faculty of Medicine of this State, which was filled by the illustrious and beloved master, Dr. Anisio Circundes de Carvalho, where we were charged with the duty of examining the feces of every patient who entered the service, and where we made our studies on the subject that constitutes our inaugural thesis ("Contribution to the Study of Ankylostomas in Bahia, 1909"), we have very frequently observed the existence of intestinal worms, even in patients who presented no apparent symptoms of verminosis.

This frequency is found not only in man. In order to fortify our inaugural thesis, we made a small number (twelve) of autopsies on animals, and there was not a single one whose intestines did not contain ascarides, ankylostomias, and, in some cases, tapeworm.

Subsequently, we made this verification on dogs, cats, domestic birds, rats, etc., finding worms in all of them.

On the other hand, we examined the feces of laboratory animals, dogs, cats, besides other animals (horses, etc.), and we found ova of worms in all of them.

The press of other matter forced us to abandon this line of work for a time, until we began to examine the feces of our patients.

We examined the blood from some of our patients drawn at night, and we found filarial embryos in a number of them.

We did not undertake a study of the endemic index of latent filariasis in Bahia, since this subject was exhaustively discussed in the graduation thesis of our esteemed and distinguished colleague, Dr. Almir de Oliveira, Bahia, 1909.

However, according to our own observations, we may say that the personal co-efficient of our investigations is 10 per cent of in-

dividuals apparently healthy, in which filarial embryos were found in the nocturnal blood.

Intestinal worms are much more frequent than filaria, it being rare to find a patient who does not harbor worms in his intestine (See the graduation theses of Pedro Martins, Cezar Piraja, Octavio Torres, 1906, and of Eloy da Silva Jorge, 1915), the percentage usually being 96 or 96.5 per cent.

In February, 1916, we were charged by the very worthy and illustrious Director General of Public Health of Bahia, and professor of general pathology in the Faculty of Medicine, Dr. Goncal Moniz, with the task of examining the feces of the apprentice sailors of our naval school (which examination was requested by the chief of the Naval Sanitary Corps, Admiral Dr. Lopes Rodrigues). The object of the examination was to eliminate ankylostomiasis from the navy. We are compelled to admit that there was not a single sailor whose feces we examined who did not harbor two or three varieties of ova, and, in some cases, four.

In infancy, the frequency of helminthiasis in Bahia is prodigious.

In our patients suffering from diseases of the skin, leishmaniasis, granuloma ulcerosa, mycosis, who were about to undergo operations, we always found ova of intestinal parasites in their feces.

In order to carry out our plan of ascertaining the exact percentage of carriers of intestinal worms, we made a certain number of examinations of the feces of healthy, or apparently healthy, individuals, and of autopsies of normal individuals who had met an accidental or violent death, to which we added many of the examinations of feces made by us in individuals affected with various diseases.

In order to look for worms in the cadavers, we opened the intestines, washed the contents in a bowl, and then strained the liquid through a sieve; this process is preferable to, and more rapid than, that with Boas' filter.

The examination of the feces was always carried on in the following manner: The material having been collected in a special vessel for transport, we took about two cubic millimeters of this, and diluted it with four or five drops of water on a long glass slide, which was covered with another slide.

We made three or four preparations in this manner; the results were always satisfying.

On account of lack of time, we never used the centrifuge on the feces for examination, which sometimes enables us to find ova in some cases where they would otherwise escape observation by our own method.

We never obtained from individuals in whose feces a few ova had been found a remittance of new material in order to ascertain if larger number of ova, or kinds of ova, could be found in other specimens.

The number of observations in females is relatively small, on account of the difficulty in obtaining material for examination. We never examined material more than one day old.

We endeavored to examine the feces of individuals of all social classes (physicians, lawyers, engineers, merchants, laboratory workers, students, etc.), and residing in the most diverse points of the capital.

We present the tables of our observations, setting forth that of healthy individuals (110 observations); then the observations of patients with other diseases (120 of our patients in the medical clinic, and some others suffering from leishmaniasis, granuloma, other skin diseases, etc.), who had intestinal worms; lastly, the table of autopsies performed in the capital of Bahia (City of Salvador).

Of the examinations of the feces made, we make the following table, giving the names of the worms found in each case:

	In persons apparently healthy. No. of Cases.	In patients with other diseases. No. of Cases.
Ankylostoma	1	2
Ankylostoma and ascarides	1	7
Ankylostoma, ascarides and trichocephalus	24	36
Ankylostoma, ascarides, trichocephalus and schistosoma	2	15
Ankylostoma, ascarides, trichocephalus, schistosoma and oxyuris	0	1
Ankylostoma, ascarides, trichocephalus and soma and oxyuris	0	1
Ankylostoma, ascarides, schistosoma and oxyuris	0	2
Ankylostoma, trichocephalus and schistosoma	1	6
Ankylostoma, trichocephalus, schistosoma and oxyuris	0	1
Ankylostoma, trichocephalus and oxyuris	0	1
Ankylostoma and trichocephalus	9	22
Ankylostoma and schistosoma	0	3
Ascarides	10	2
Ascarides and trichocephalus	30	5

Ascarides, trichocephalus and schistosoma	1	1
Ascarides, trichocephalus and oxyuris	1	2
Ascarides and oxyuris	1	1
Trichocephalus	18	3
Trichocephalus and oxyuris	0	1
Trichocephalus and schistosoma	2	0
Trichocephalus and tenia saginata	1	0
Schistosoma	1	3
Oxyuris	1	0
Tænia saginata	1	0
Patients free from worms	5	0
Total number of examinations	110	120

In the autopsies performed, we found the following associations:

Ankylostoma and ascarides	6
Ankylostoma, ascarides and trichocephalus	10
Ankylostoma, ascarides, trichocephalus and oxyuris	3
Ankylostoma, ascarides, trichocephalus and schistosoma	3
Ankylostoma and trichocephalus	1
Ankylostoma, trichocephalus and oxyuris	1
Ascarides and trichocephalus	6
Total number of autopsies	30

In 110 persons examined we found:

Ankylostoma in	38	Ankylostoma	102
Ascarides in	70	Ascarides	78
Trichocephalus in	89	Trichocephalus	98
Schistosoma in	7	Schistosoma	32
Oxyuris in	3	Oxyuris	13
Tænia saginata in	2		

And five negative bases.

In thirty autopsies accidentally killed we found:

Ankylostoma in	24
Ascarides in	28
Trichocephalus in	24
Schistosoma in	3
Oxyuris vermicularis in	4

Altogether, 230 individuals were examined. Of these, 110 did not seem abnormal in any way, and 120 were sick with various diseases, without apparent symptoms of worms; and 30 autopsies were made in cases of violent death.

From these observations we may infer that the number of persons infested is enormous.

There is agreement between the data furnished by the examina-

tions made of persons supposed to be normal, and those dead by external violence; there is slight deviation in the number of carriers of trichocephalus, which was 89 in 110 cases in healthy individuals, and twenty-four times in thirty autopsies.

The number of these hosts of ankylostoma was greater among those examined at the autopsy than among (apparently) healthy living subjects, perhaps because, among the latter, the larger number were individuals belonging to the better social classes.

Of the 110 persons, 82 were males and 28 females.

Under five years of age, six were males, and three females.

Among the female subjects, 11 did house-work, and 5 were cooks or other servants.

Of the 82 males, there were: 8 physicians, 7 lawyers, 1 engineer, 11 students, 8 merchants and clerks, 28 naval apprentices, 2 public employes, 4 in other professions; the remainder are individuals under fifteen years of age.

Of the 120 suffering from other diseases, there were 15 females and 105 males.

The females were: 10 servants, 2 day-laborers, 2 laundresses, and 1 field-hand.

The males were: 37 laborers, 18 other trades (carpenters, shoemakers, tailors, etc.), 14 longshoremen, 4 gardeners, etc., potters: 5 stone-cutters, 3 day-laborers, 2 bakers, 1 merchant, 9 clerks; other occupations, 5.

It is to be observed that in this group of individuals suffering from various diseases there were very few who did not present ova of ankylostoma in the feces, from 85 to 90 per cent, or 101 infested out of 120 patients.

Among the autopsies, 21 were males and 9 females.

By occupation: 2 students, 1 dressmaker, 5 servants and laundresses, 6 coachmen, longshoremen and stevedores, 2 servants, 1 sailor, 1 chauffeur, 1 carpenter, 1 day-laborer, 1 profession unknown. The remainder were under 15 years of age.

Of the 230 individuals examined, we found a single variety of worms in 42, thus distributed:

	Healthy individuals.	Sick with other diseases.
Ankylostoma alone	1	only 2
Ascarides alone	10	only 2
Trichocephalus alone	18	only 3
Schistosoma alone	1	only 3
Oxyuris vermicularis alone	1	0
Tænia saginata alone	1	0

In the thirty autopsies, the parasitism was always of more than one variety.

We realize that the number of our observations is too small to justify us in drawing very definite conclusions.

We gathered the worms only at the autopsies, and from these we arrive at the following conclusions: Of the two species of ankylostoma, the type that predominates is the ankylostoma of Stiles *(Necator americanus)*. We affirm with satisfaction the conclusions at which we arrived in the study made to elaborate our graduation thesis on the relative frequency in Bahia of the two species of ankylostoma of Stiles and of Dubini.

We found the ankylostoma of Dubini only twice, and the two species together only once.

The ascarides were usually eight or ten in number, and only at the autopsy of a little girl (accidentally poisoned by mandioca) we found more than 100 ascarides. This case would not have been likely to figure in our first table, because she would naturally have presented some symptoms of verminosis during life.

In some cases, as in autopsy No. 20, the ascarides reached a large size; thus, some female worms measured 40 or 41 centimeters in length, and some males 24 or 25 centimeters.

We found the ascarides in all portions of the intestinal canal, from the duodenum to the anus, but most frequently, however, in the jejunum and the ileum.

In regard to having found ascarides in other parts of the digestive tube, this seems to be unimportant, because we know of the migration of these worms, from its normal habitat when the cadaver begins to cool.

We did not have time to examine the trichocephali found, merely making note of the adherence of these worms to the human intestines. They were so deeply buried in the mucosa of the large intestine that it was impossible to withdraw them, even at autopsies made many hours after death.

We always found the trichocephalus in the large intestine, in the greatest number in the cecum and the ascending colon, growing scarcer as distance from these increased.

We found the oxyuris scanty, and in few cases (four) localized in the rectum or immediate neighborhood.

We found Manson's schistosoma at first in a few cases and in very small numbers; this was, perhaps, due to the rapidity with

which we had to do our work, and to the fact that we did not make a critical search for it in all of our autopsies.

However, this year we found in 25 autopsies the schistosoma in 18 cadavers; sometimes 20 or 25 worms were obtained, some in pairs, some singly, not only in the portal vein, but also in its branches.

This shows that its frequency among us is much greater than we suppose.

Who knows if that be not the cause of many cases of cirrhosis of the liver in our midst?

We sent a large number of our schistosomes to the learned Prof. Adolpho Lutz, who, after his brilliant discovery of the evolutionary cycle of the worm, is now completing his work.

We proceed in the following manner to withdraw the worms: We ligate the superior and inferior venæ-cavæ and the portal vein, then cut the veins beyond the ligatures, and remove the liver from the abdominal cavity.

We open the portal vein and take out the schistosomas found in the blood or coagula; then we search in the branches of the hepatic veins.

When the worms are caught in coagula, we leave them in contact with the soda at 36°, slightly diluted and then they are easily removed.

The tænias that we obtained for study were eliminated by means of vermifuges. The two that figure in our statistics were of tænia siginata. Up to the present time there is no record of tænia solium in Bahia which originated in that place.

We wish here to express our gratitude to Dr. Oscar Freire, the illustrious professor of legal medicine in the Faculty of Medicine in Bahia, who facilitated our work on the cadavers which fell within the province of that institute.

The majority of the authors say that the smallness of the number of worms has no influence on the general health of the host. This ought to be, indeed; but we think that the intestinal worms, even in small numbers, can produce the most diverse modifications. Thus, we find eosinophilia in the blood of apparently healthy individuals who are carriers of the worms; this clearly proves that their toxins are affecting the organism, which reacts to that form of parasite.

We cannot believe in the inocuousness of the ascardies, tricho-

cephali, etc., principally the latter, which penetrate the intestinal mucosa, causing very small wounds, which are so many portals of entry for infection.

We have never seen a case of verminosis due to trichocephali alone in which there were anemia and other symptoms. Among us, the association of parasites is the rule, and it is not rare to find an individual whose intestines shelter three or four varieties.

We will here cite a case that we deem very instructive and interesting, and, if it had not been for the microscopic examination of the feces and the elimination of the parasites, the patient would have died:

C. J., native of Maranhao, physician, suffering for a long time from gastro-intestinal disturbances, which caused a progressive loss of weight, since he fell from 73 kilograms to 57.

He consulted all the local doctors, and each one made an exquisite diagnosis. Growing more emaciated, he decided to come to Bahia, where he was examined by most of our physicians, but with no better luck than before. Some requested an examination of the feces, but only for the purpose of learning the action of the intestinal juice on the food. The diagnoses varied among enteritis, gastro-enteritis, entero-gastro-colitis, muco-membranous enteritis, chronic typhlitis, neurasthenia, etc.

He remained free from beriberi, and he went back to Maranhao in the same condition as when he arrived. He continued to suffer from the same disturbances, intestinal pains not well localized, nausea and, sometimes, vomiting; diarrhea, bad digestion of all foods. He did not derive the slightest benefit from medication.

A short time after he returned to Maranhao he passed some ascarides, and he took some vermifuge and passed an uncountable number of ascarides. He again took the vermifuge, and he soon regained his original weight.

We might relate many other observations besides this one, in which a simple examination of the feces would clear up all doubts, and make the diagnosis clear.

Dr. R. Gonzalez, of Caracas, Venezuela, in his recent work on "The Differential Diagnosis Between Appendicitis and Bilharziosis," cites several erroneous diagnoses due to a lack of examination of the feces; and he shows that errors of diagnosis of the appendicular form of intestinal parasitism are common also in the capital of Venezuela; and, in this connection, he cites five cases that presented the symptomatology of appendicitis.

In one of these cases an eminent surgeon of that capital performed a laparotomy for the purpose of removing the appendix, and when he found the appendix perfectly healthy he decided to remove the right ovary, which was condemned by default as being responsible for the pains from which the patient suffered.

In another case three internists and two surgeons diagnosed appendicitis, and an operation was fixed for the next day. In the evening, however, the diagnosis of intestinal parasitism, made by another physician, stopped the operation, and it is now seven years since that appendix has been awaiting the execution of that operative sentence.

In two other cases surgical intervention was decided on, as in the others, but an opportune coprological examination commuted the sentence to evacuation of the worms that simulated appendicitis. These four cases were observed by the author quoted, in Caracas, and a fifth was mentioned in the treatise on *Maladies parasitaires* of Grall and Charac. In all of these cases the disease ended favorably.

Of the tables already given, we add that of the examinations of the feces of individuals gathered in the infirmaries of the second and third chairs of Clinical Medicine of the Faculty of Medicine of Bahia.

Examination of the feces of individuals above referred to:

Ankylostoma alone	116	cases
Ankylostoma and ascarides	113	"
Ankylostoma, ascarides and trichocephali	221	"
Ankylostoma, ascarides and trichocephali and schistosoma	79	"
Ankylostoma, ascarides and trichocephali and schistosoma and oxyuris	5	"
Ankylostoma, ascarides, trichocephali and oxyuris	21	"
Ankylostoma, ascarides and schistosoma	27	"
Ankylostoma, ascarides, schistosoma and oxyuris	1	"
Ankylostoma, ascarides and oxyuris	27	"
Ankylostoma, trichocephalus, schistosoma and oxyuris	5	"
Ankylostoma, trichocephalus and oxyuris	12	"
Ankylostoma and trichocephali	138	"
Ankylostoma and schistosoma	17	"
Ankylostoma, schistosoma and oxyuris	2	"
Ankylostoma and oxyuris	3	"
Ascarides alone	84	"
Ascarides and trichocephali	101	"
Ascarides, trichocephali and schistosoma	14	"
Ascarides, trichocephalus, schistosoma and oxyuris	7	"
Ascarides and schistosoma	9	"
Ascarides and oxyuris	9	"
Trichocephalus alone	73	"
Trichocephalus and oxyuris	5	"
Trichocephalus and schistosoma	5	"
Trichocephalus, schistosoma and oxyuris	1	"
Trichocephalus alone	73	"
Oxyuris alone	7	"
Anguillula	107	"
Negative examinations	57	"
Number of examinations	1,213	

From a general review of the above, we conclude that, in 1,213 examinations, ankylostoma was found 795 times; ascarides, 700; trichocephalus, 714; schistosoma of Manson, 209; oxyuris, 86; anguillula, 107; with 57 negative examinations. From these data, we may judge how common intestinal worms are among us.

Of the individuals examined, the greater part were field-hands and day-laborers; the rest were engaged in the most varied occupations, and of these, at least two-thirds came from the interior of the State.

These people go barefoot, drink water that is more or less contaminated, bathe in lakes and rivers, and defecate on ground close to their dwellings.

Even here we may confirm the protective rôle of shoes, and appreciate that the individuals who are accustomed to wearing shoes (people of the better class) are the only ones spared from the invasion of ankylostoma.

In regard to the schistosoma, it seems to be incontestably proved by Prof. Dr. Adolpho Lutz that the infestation takes place when the individual bathes in contaminated lakes, or when they drink the water from these lakes *(vide Brazil Medico,* December, 1916, and February, 1917).

We have already seen how, in our city, healthy persons, or persons adjudged healthy, are infested with worms.

In the last table given above, 57 examinations appear as negative.

We believe that this number should be reduced, and for the following reason: In the clinics some examinations of feces are made by new students, trying for the position of intern, and who would be likely to overlook ova in the feces in a rapid examination.

We think that the same fact explains the great number of persons harboring anguillulas. We are sure that in the great number of examinations made by us the percentage of anguillula was very low—almost *nil*, in fact. It is most likely that the larvæ of ankylostoma were mistaken for the anguillula in the examinations of the feces, since the average room temperature among us, 26° or 28° C., is favorable to the development.

Furthermore, we know how difficult it is to make a differential diagnosis between the larvæ of ankylostoma and anguillulas.

We made the following experiment in feces in which anguillulæ were said to exist; we proceeded to examine the feces immediately

after evacuation, and we found only eggs of ankylostoma, with a large number of blastomeros, and with larvæ already well developed, scarcely hoping to find them hatch out; but this actually occurred many times during the examination.

In the table, not a single examination appears of elimination of proglottides or ova in the feces.

We attribute the rarity of tapeworms among individuals from the interior to the fact that they cook their beef and pork thoroughly before eating them.

Oxyures are found in small proportion, because they are eliminated with the first portions of the feces, and the ova hatch out almost immediately after expulsion, being found only when the feces are examined immediately after defecation, which does not always happen.

From the frequent observations of the verminoses among us, we long ago began to employ anthelmintics systematically on every patient admitted to the hospital, giving thymol according to the formula recommended by Dr. Adolpho Lutz, and employed for the first time in Bahia by Goncal Moniz, the eminent professor of the Faculty of Medicine, followed by Alfredo Britto and many others.

Actually in our dermatological service in the Hospital of Santa Isabel we give our patient 0.75 gram [12 grains] of betanaphthol every morning for twenty or thirty days, and then examine the feces to verify the existence of worms.

We went further than that and taught those poor patients various methods of preventing reinfestation.

The illustrious Prof. Pedro Severiano de Magalhæs, in a letter published in the columns of the *Jornal do Commercio,* of Rio de Janeiro, December 17, 1916, and a correction made on January 12, 1917, with the title of "As Chagas de uma Chaga Nacional," reminds us that "a matter worthy of careful investigation is the influence of intestinal obstruction on surgical injuries on the result of operative intervention."

In 1914 and 1915, in several patients gathered for a long time in the surgical infirmary, under the care of our illustrious colleague, Dr. Fernando Luz, suffering from large ulcers of the legs and feet, and very anemic, we had occasion to verify the presence of ova of worms in the feces (ova of ankylostoma, ascaris, trichocephalus and some schistosoma), and to estimate the hemoglobine in all these patients (the very low proportion of 50 per cent, and

sometimes less). We could understand why all these cicatrized rapidly after the expulsion of the worms above referred to.

OBSERVATIONS.

V. J. S., 30 years, mestizo, unmarried, native of Bahia, porter, living in Retiron. He entered the infirmary on December 26, 1914. Diagnosis: Chronic ulcer of both legs.

His feet had ova of ankylostoma, trichocephalus, ascarides and schistosoma. The ulcers rapidly healed after the elimination of the worms with thymol, and appropriate local treatment of the sores.

J. B. S., 21 years, dark, unmarried, native of Bahia, day-laborer, resident of Graca. He entered the hospital on November 18, 1914. Disease: Ulcer of the left leg, and crushing of the right foot, with destruction of the soft tissues of the heel. His feces contained ova of ankylostoma and ascaris. Thymol was given on April 4, 1915. He left the hospital on April 20, 1915, cured.

B. P. M., 25 years, mestizo, unmarried, native of Bahia, shoemaker, resident of Boa Vista; entered the hospital on April 19, 1915. Diagnosis: Ulcers of the leg, and malaria. Feces contained ova of ankylostoma, ascaris and trichocephalus. Treatment with thymol, and local applications to ulcers.

We could quote many similar cases. We recall perfectly one patient, who was under the care of Dr. Fernando Luz, and who was shot in one of his legs. He was brought to the hospital in a precarious state, having 45 per cent of hemoglobine, and, in his feces, ova of ankylostoma in abundance, trichocephalus, and ascaris. The surgeon had to operate without delay, because gangrene of the leg threatened. There was no suppuration after the operation; the wound healed slowly, and a short time after healing the patient had such severe diarrhea he became cachectic and died.

The autopsy verified the presence of a colossal number of ankylostomas, ascarides and trichocephali, which caused death. "Cicatrization is ordinarily delayed on account of the general condition of the patient." (Page 76, O. Torres: "Contribution to the Study of Ankylostomiasis in Bahia," 1909.)

For this reason my illustrious colleague, Dr. Fernando Lutz, always employs thymol in all of his cases before subjecting them to an operation, except when immediate intervention is necessary.

Ankylostomiasis and other verminoses here, as elsewhere, assumes the character of a social malady.

Let us repeat what we wrote in our graduation thesis: Prophylaxis can only be done by means of public conferences, placards,

education of the people through brochures, the introduction of a system of drainage and sewerage, etc.

In the Section of Biology of the First Paulista Medical Congress, of which we were elected president, held in December, 1916, in the Capital of S. Paulo, we called attention to the advantages of publishing a little book on the prophylaxis of verminoses, and the practical hygiene, which might be taught in the lower schools.

We know that the prophylaxis of intestinal verminoses is to-day done by means of systematic and obligatory treatment, and we think that this therapeutic prophylaxis gives very practical results, when it causes evacuation of the parasites without prescribing a special regimen, nor interfering with the medicine given. (In this case, betanaphthol.)

The worthy Rockefeller Foundation has undertaken the prophylaxis of the verminoses in America by giving pecuniary, scientific and practical aid to the hygienic service, thus breaking away from routine. The State of Rio de Janeiro accepted the offer of the Rockefeller Foundation, and already the work is progressing under the wise direction of Prof. Lewis Wendell Hackett. We are confident that other States will follow Rio de Janeiro in accepting the offer of the Rockefeller Foundation.

It is a pity that the results of the measures employed are not immediate, and only after the lapse of a few years will be able to appreciate this work in the diminished mortality and increased birth rate.

Conclusions.

1. The verminoses produced by intestinal worms (ankylostoma, ascarides, trichocephalus, schistosoma) are very common in Bahia.
2. Ninety-six per cent of apparently healthy individuals in our midst shelter intestinal worms.
3. One hundred per cent of the inhabitants of the interior harbor intestinal worms.
4. The statistics drawn up by us clearly establish the above conclusions.
5. Radical measures should be taken to prevent the spread of verminoses.

NEWS AND COMMENT

LOUISIANA NURSES BOARD OF EXAMINERS.—The semi-annual examination of the Louisiana Nurses Board of Examiners was held in Shreveport and in New Orleans, early in December, with over thirty successful applicants.

SOCIETY MEETING.—At the last meeting of the East Baton Rouge Parish Medical Society held Dec. 12, the following officers were elected to serve during 1918: President, Dr. R. P. Jones; Vice-President, Dr. J. F. Stockwell; Secretary-Treasurer, Dr. C. A. Weiss; Delegates, Drs. W. S. Cushman and J. A. Caruthers; Alternates, Drs. E. O. Powers and C. A. Weiss.

JOURNAL'S TWENTY-FIFTH ANNIVERSARY.—January, 1918, will be the twenty-fifth anniversary of the *American Journal of Clinical Medicine.* Thirty-five thousand copies of this journal will be issued and will contain articles by well-known men showing the progress of the past quarter century in all branches of medicine and surgery.

INCREASED HOSPITAL RATES.—Because of the high cost of food, medicine, gauze and fuel, the hospitals in Baltimore have asked the city to pay $1.75 a patient a day instead of the existing rate of 62 1-2c. a patient a day.

DRAFT PHYSICIAN PUNISHED.—On October 3, Dr. Henry Seligman, Brooklyn, is said to have been convicted of a conspiracy to cause the evasion of the selective draft law, and to have been sentenced to two years' imprisonment in the United States Penitentiary, Atlanta, and to pay a fine of $3,000.

FIRST ATROPIN MANUFACTURED.—The first atropin manufactured in the United States was placed on the market by Eli Lilly and Company in 1915. This firm found it practicable to obtain atropin from stramonium, and purchased, in 1916, 1,600,000 pounds of this herb.

SOLDIERS BUY SUBSTITUTES FOR ALCOHOL.—According to report, soldiers in military camps in "bone dry' 'States buy such alcohol substitutes as aromatic spirits of ammonia, paregoric, bay rum, bitters, tonics, cooking fruit extracts, etc. A crusade is on against

this abuse and that of proprietary remedies having high alcohol proportions.

ANTISPITTING LAW ENFORCED.—The Health Board of New York City has ordered police departments to enforce the antispitting law and to arrest all who spit in public places. The police magistrates are asked to act with determination in imposing suitable sentences.

MODEL SECTION HOSPITAL.—Dr. Henry Fairfield Osborn, president of the American Museum of Natural History, in co-operation with H. F. Beers, superintendent of the construction of the Museum, have on exhibit at the American Museum of Natural History, New York, a model of a "Liberty" field hospital, built in sections, and suitable for use in the army, and in Red Cross and general hospital work. It is constructed in five-foot units, so that it can be taken apart and reconstructed by unskilled labor, and so space can be saved in transporting it. The average hospital of this kind is from 150 to 160 feet in length and 24 feet wide.

INSANE WOMEN DOING WAR WORK.—According to report, many women in State Hospitals for the Insane, whom heretofore it has been difficult to keep employed, are said to be now engaged in knitting and making bandages.

THE SOUTHERN GASTRO-ENTEROLOGICAL ASSOCIATION, which met in Memphis on November 12, re-elected the following officers: president, Dr. J. G. Johnson, of Atlanta, Ga.; vice-president, Dr. J. T. Rogers, Savannah, Ga.; secretary treasurer, Dr. M. H. Smith, Jacksonville, Fla.

SUGAR IN MEDICINE.—The Sugar Commission of the New York Pharmaceutical Conference recently distributed about 40,000 pounds of sugar to 2,400 pharmacists of Greater New York, exclusively for medicinal and pharmaceutical purposes. In the United States Pharmacopeia there are 39 preparations and in the National Formulary there are 179 preparations which contain sugar.

PRIZE OFFERS.—The American Academy of Medicine announces two prize offers. For 1918, it offers $100 for the best essay on "The Principles Governing the Physician's Compensation in the Various Forms of Social Influence," and for 1921, the sum of $250 on the subject of "What Effect has Child Labor on the

Growth of the Body?" For further information address Dr. W. T. Grayson, secretary, 1101 Westinghouse Bldg., Pittsburgh, Pa.

COLLEGES COMBINE.—The Bennett Medical College and the Chicago College of Medicine and Surgery are now combined to form the medical department of Loyola University of Chicago. The officials of Loyola University recently purchased the buildings and equipment of the Chicago College.

ALVARENGA PRIZE.—The award for 1917 of the Alvarenga Prize has been made to Dr. Wilbur C. Davison, Baltimore, for his essay on "The Superiority of Inoculations with Mixed Triple Vaccine (B. typhosus, B. paratyphosus A. and B. paratyphosus G.). Over Successive Inoculations with the Single Vaccine as Shown by Agglutinin Curves in Men and Rabbits." The next award of $250 will be made in July, 1918. Essays in competition must be typewritten in English, identifed by a motto with sealed name and address, and submitted to the College of Physicians of Philadelphia before May 1.

DEATHS FROM PNEUMONIA.—The Metropolitan Life Insurance Company report 38,000 deaths among industrial policy holders in the last six years. It is claimed that lobar pneumonia causes more deaths than any other infectious disease and that it should be quarantined against.

CHAMBERLAIN BILL FOR UNIVERSAL MILITARY TRAINING.—The Clinical Congress of Surgeons and State Committees of the Medical Section, Council of National Defense, at meetings in Chicago the latter part of October, adopted resolutions favoring the Chamberlain Bill, which proposes to require at least six months of intensive military training of all young men in their nineteenth year, to become operative as soon as the army cantonments are available, also recommending physical training in schools.

MEETING OF ROENTGENOLOGISTS.—The fourth annual midwinter meeting of roentgenologists will be held at Hotel Traymore, Atlantic City, Friday evening and Saturday, January 4 and 5, 1918, to which all physicians interested are invited.

TO RECORD TUBERCULOUS DEATHS.—The Bureau of Census, Federal Department of Commerce, is asking the co-operation of

every physician in the United States in an effort to prepare and publish a monograph of the mortality from Tuberculosis, and the occupations of the decedents as well, covering the year 1918. The State departments have promised whatever aid lies in their power to give.

Shreveport Medical Society Elects Officers.—At the annual meeting of the Shreveport Medical Society last month, the following officers were elected for the ensuing year: president, Dr. J. E. Knighton; first vice-president, Dr. A. A. Herold; second vice-president, Dr. J. G. Yearwood; secretary, Dr. W. P. Butler; treasurer, Dr. W. B. Hunter.

Mortality Statistics.—The Metropolitan Life Insurance Company invites physicians, public health and social workers to make use of its collection of mortality statistics, which present the principal causes of death among white and colored wage earners in the United States and Canada. The material covers over ten million individuals for each of the six years, 1911 to 1916. Death rates are available for each race, by sex and by age period. All inquiries should be addressed to Statistical Bureau, Metropolitan Life Insurance Company, One Madison Ave., New York City.

Medical Advisory Boards.—Since conditions have arisen where the district examining boards have not been able to settle disputed questions, "medical advisory boards," as proposed by the trustees of the American Medical Association, have been instituted to solve the problem. Well-equipped laboratories throughout the States are to be established, manned by men of well known professional ability in all the specialities, to act as centers for the examination of conscripts where there is a dispute as to their capacity to serve in the Army and Navy. Careful physical examination and laboratory findings will be recorded and the results of this work will be reported to the District Examining Boards.

The American Review of Tuberculosis.—This journal, which is the official organ of the National Association for the Study and Prevention of Tuberculosis, has made a distinct place for itself in the few months of its existence. The Association, in publishing it, has two distinct aims: first, to provide a clearing house for those who are doing original research work, and secondly, to give the general practitioner in compact form the information

concerning tuberculosis. Physicians are recommended to subscribe to this journal, whose office is at 105 East 22nd St., New York City.

PERSONALS.—Surgeon General, W. C. Gorgas, passed through New Orleans during the past month en route to Camps Beauregard, Pike and Fort Bowie, (Houston, Texas,) on an inspection tour of those places. Major Isadore Dyer, M. R. C., and Dr. Oscar Dowling (New Orleans) accompanied General Gorgas.

Capt. C. Jeff. Miller, M. R. C., formerly chairman of the District Exemption Board at New Orleans, has been appointed by the War Department as medical advisor to Governor Pleasant.

Major Roy M. Van Wart, M. R. C., (New Orleans) who was formerly stationed at Fort Oglethorpe, Ga., has been transferred to Camp Sheridan, Montgomery, Ala.

Dr. W. M. Johnson (New Orleans) attended the meeting of the Southern Medical Association in Memphis.

REMOVALS: Dr. W. M. Johnson, from 1130 to 1121 Maison Blanche Bldg.; Dr. W. D. Wheless, from Mangham, to Rayville, La.; Dr. J. H. Petty, from Endee, New Mexico, to Dalhart, Texas.

BOOK REVIEWS AND NOTICES

Handbook of Anatomy, Being a Compend of Anatomy. By James K. Young. Revised edition. F. A. Davis Company, Philadelphia, 1917.

With the reading of the title of this book arises the question of the advisability of allowing medical students to have in their possession a laboratory manual of anatomy, or especially a "compend" of any sort. Experience of all teachers striving for thoroughness has shown that the student is prone to neglect his text-book of gross anatomy and use his manual instead, and that, as a result, he tries to memorize his anatomy instead of knowing it. A large number of professors of anatomy in the better schools advise against the use of manuals, and some forbid their use.

In the second place, with the excellent manuals of Cunningham, Parsons and Wright, Treves, Barker, Buchanan and Radasch, and those of Heisler, Patterson, Rockwell, Pederson, Potter, Metheny and others already available, the reviewer of this one by Dr. Young has difficulty in finding any excuse for its existence, except for the gratification it may afford the author. The arrangement of material and context are certainly no better than is to be found in other manuals of its kind, and the majority of the cuts are extremely crude. Some of the best in the book are reproduced without giving credit to their source.

Among the best features in the book are a number of diagrams of the vascular and nerve plexuses. Those of the arteries of the head and neck and the extremities, and those of the cephalic, cervical, brachial and

lumbar and sacral nerve plexuses, and the diagram of the sympathetic (Fig. 124, which is after Flower) have considerable teaching value. Some diagrams of the nerve tract of the spinal cord and brain (original) impart incorrect ideas as to the form of the neurones taking part in the neurone chains, and in these, and in the text, erroneous ideas of the origin of nerve tracts are imparted. For example, the student is told that the olfactory nerve arises from the olfactory bulb.

IRVING HARDESTY.

Diagnostic Symptoms in Nervous Diseases, by Edward Livingston Hunt, M. D. Second edition. W. B. Saunders Company, Philadelphia, 1917.

This book of 280 pages and 65 illustrations answers the demand for a book presenting the salient points and leading diagnostic symptoms of the principal nervous diseases. In it the reader will find the essentials in neurological diagnosis, without the laborious work involved in consulting the larger text-books.

The opening chapter is devoted to the examination of a nervous case. An outline used at Columbia University is here given. The rest of the work, divided into sixteen chapters, presents the subject-matter, which is treated from a clinical point of view, in a most clear, comprehensive and masterly way.

Each chapter presents the definition, essential characteristics, classification and explanation (anatomical and pathological) of a prominent symptom or group of symptoms, also a list of diseases wherein the symptom under discussion forms a part, and the other accompanying symptoms in such diseases.

Then follows the diagnosis, prognosis and treatment of such cases.

To single out any one chapter would be unfair to the others equally good. However, the reviewer cannot resist saying that those on paralysis, tremors, reflexes, vertigo, the eye, cerebrospinal fluid and spinal localization should prove of special value.

The illustrations are almost all original and to the point.

This book will prove of great value as a guide and reference book for the general practitioner as well as the neurologist.

CAZENAVETTE.

The Medical Record Visiting List. Wm. Wood & Co., New York, 1918.

In addition to the blank pages for recording visits and accounts, it presents the usual tables, revised and modernized. It is one of the best lists published.

The Physician's Visiting List. P. Blakiston's Son & Co., Philadelphia, 1918.

Published in three styles, this list appears for the sixty-seventh year. It includes the usual tables and is in every way presentable and desirable.

PUBLICATIONS RECEIVED

C. V. MOSBY COMPANY, St. Louis, Mo.

An Intermediate Textbook of Physiological Chemistry, by C. J. V. Pettibone, Ph. D.

Surgery and Diseases of the Mouth and Jaws, by Vilray Papin Blair, A. M., M. D., F. A. C. S. Third edition. Revised so as to incorporate the latest data concerning gunshot injuries of the face and jaws.

Talks of Obstetrics, by Rae Thornton La Vake, M. D.

Physical Diagnosis, by W. D. Rose, M. D.

THE MACMILAN COMPANY, New York, 1917.

The Principles of Mental Hygiene, by William A. White, M. D. With an introduction by Smith Ely Jelliffe, M. D., Ph. D.

The Clinical Pathology of the Blood of Domesticated Animals, by Samuel Howard Burnett, A. B., M. S., D. V. M. Second edition, revised and enlarged.

G. P. PUTNAM'S SONS, New York and London, 1917.

A Practical Dietary Computer, by Amy Elizabeth Pope.

PAUL B. HOEBER, New York, 1917.

The Treatment of Infected Wounds, by A. Carrel and G. Dehelly. Translation by Herbert Child, with introduction by Sir Anthony A. Bowlby.

W. B. SAUNDERS COMPANY, Philadelphia and London, 1917.

The Surgical Clinics of Chicago. October, 1917. Vol. 1, No. 5.

Manual of Anatomy, by Henry Erdmann Radasch, M. Sc., M. D.

An Introduction to the History of Medicine, by Fielding H. Garrison, A. B., M. D. Second edition, revised and enlarged.

W. M. LEONARD, Boston, 1917.

Neurosyphilis, by E. Southard, M. D., Sc. D., and H. C. Solomon, M. D., with an introduction by James Jackson Putnam, M. D.

WM. WOOD & CO., New York, 1917.

The Medical Record Visiting List, or Physician's Diary, for 1918. Revised.

P. BLAKISTON'S SON & CO., Philadelphia, 1917.

The Physician's Visiting List for 1918.

WASHINGTON GOVERNMENT PRINTING OFFICE, Washington, D. C., 1917.

Public Health Reports. Vol. 32, Nos. 45, 46 and 47.

Report of the Health Department of the Panama Canal. September, 1917.

MISCELLANEOUS.

Impotence, Sterility and Sex Gland Implantation, by G. Frank Lydston, M. D., D. C. L. (The Riverton Press, Chicago, 1917.)

Food Value of the Banana. (United Fruit Company, Boston, Mass., 1917.)

REPRINTS.

Een paar nieuw ontdekte darmparasieten; Trichomonascysten, door S. L. Brug.

Apuntes Preliminares, por el Doctor R. Pacheco Luna.

A Few Remarks on Imbecility, and a Suggestion Aimed at Prevention, by H. L. Fougerousse.

Farming and Gardening as a Diversional Occupation for the Insane, by John N. Thomas, M. D.

Ligation or Excision of the Pelvic Veins in the Treatment of Puerperal Pyemia, by C. Jeff. Miller, M. D., F. A. C. S.

Notes on Tropical Diseases Met With in the Balcanic and Adriatic Zones, by Lieut.-Col. Aldo Castellani, M. D., M. R. C. P., R. I. N. M. S.

MORTUARY REPORT OF NEW ORLEANS.

Computed from the Monthly Report of the Board of Health of the City of New Orleans, for November, 1917.

CAUSE.	White.	Colored.	Total.
Typhoid Fever			
Intermittent Fever (Malarial Cachexia)	1		1
Smallpox			
Measles			
Scarlet Fever	1		1
Whooping Cough	1	2	3
Diphtheria and Croup	2		2
Influenza	6	1	7
Cholera Nostras			
Pyemia and Septicemia			
Tuberculosis	38	40	78
Cancer	22	12	34
Rheumatism and Gout	1		1
Diabetes	2		2
Alcoholism	1		1
Encephalitis and Meningitis	1	2	3
Locomotor Ataxia	1		1
Congestion, Hemorrhage and Softening of Brain	20	14	34
Paralysis	4	1	5
Convulsions of Infancy	1		1
Other Diseases of Infancy	10	5	15
Tetanus	1		1
Other Nervous Diseases	1		1
Heart Diseases	74	39	113
Bronchitis	4	4	8
Pneumonia and Broncho-Pneumonia	22	22	44
Other Respiratory Diseases	1		1
Ulcer of Stomach	1	1	2
Other Diseases of the Stomach	2	2	4
Diarrhea, Dysentery and Enteritis	11	10	21
Hernia, Intestinal Obstruction	2	3	5
Cirrhosis of Liver	7	5	12
Other Diseases of the Liver	4	1	5
Simple Peritonitis			
Appendicitis	1	3	4
Bright's Disease	32	22	54
Other Genito-Urinary Diseases	13	9	22
Puerperal Diseases	1	4	5
Senile Debility	1		1
Suicide	3		3
Injuries	19	19	33
All Other Causes	30	19	49
TOTAL	342	240	582

Still-born Children—White, 16; colored, 17; total, 33.

Population of City (estimated)—White, 276,000; colored, 102,000; total, 378,000.

Death Rate per 1000 per Annum for Month—White, 14.87; colored, 28.24; total, 18.48. Non-residents excluded, 15.25.

METEOROLOGIC SUMMARY (U. S. Weather Bureau).

Mean atmospheric pressure..... 30.21

Mean temperature..... 59.

Total precipitation..... 0.34 inches

Prevailing direction of wind, northwest.